CITY OF BOSTON

MARKET INDEXING

FISCAL YEAR 1988

THADDEUS J. JANKOWSKI
COMMISSIONER OF ASSESSING

OCTOBER 1987

Boston
Raymond L. Flynn, Mayor

October, 1987

Dear City of Boston Taxpayer,

The Massachusetts General Laws require property to be assessed each year at its full and fair cash value. A complete revaluation is required to be conducted every three years. In the interim years between revaluations, the City, pursuant to state law, market indexes or trends values to keep property assessments accurate. Next year, in fiscal 1989, the City will once again undertake a comprehensive revaluation as it did in fiscal year 1986.

This report is a presentation of the analysis of the Boston real estate market which was conducted for market indexing of real estate values as of January 1, 1987, the assessment date for the fiscal year 1988 tax bill. You will find in the report not only a description of the data analyzed and the analytic procedures used, but also an expression of the Assessing Department's policy concerning the indexing process and its application for purposes of taxation.

I strongly believe that taxpayers are entitled to a full explanation of the procedures followed in determining their assessed value. Citizens must be assured that their taxes are just, and that they are being asked to pay their fair share and no more. The Assessing Department's mission is to ensure that taxes are assessed fairly and equitably, and in the most efficient manner.

I hope you find this report both informative as a study of the Boston real estate market and as an explanation of the assessing process. I invite your comments.

Sincerely,
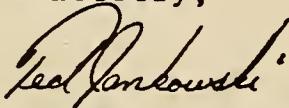
Thaddeus J. Jankowski, Jr.
Commissioner

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CITY OF BOSTON

MARKETING INDEXING VALUES

FISCAL YEAR 1988

INTRODUCTION

This report presents the procedures, data, and conclusions reached in developing the factors or percentages to index assessed values for FY 1988. This indexing of values for FY 1988 is the fourth in a series that was initiated in FY 1984, to keep assessments up to date between the triennial revaluations required by state law. It is the city's policy to make such indexing adjustments when there have been meaningful changes in real estate values during the assessment year that is involved. Meaningful changes in real estate values did occur during calendar year 1986, which justified the indexing for FY 1988.

Market indexing or trending of assessed values is the process of increasing (or decreasing) the assessments of a group of properties by a uniform percentage. Distinct procedures and indexing factors are used for designated groups of properties. These groups are based on comparability with respect to land use, class, and neighborhood as well as the character and availability of information on indicators of changes in property value.

As a procedure to keep assessments current for the two years between the
triennial revaluations, the indexing process is a substitute for reappraisal.
Accordingly, in developing the indexing factors for the classes of property,
emphasis is placed on using the principal indicators of market value that were
originally used in the appraisal of the properties. These focus on:

1. Sales, used in the market approach primarily for residential
    property,
2. Income, expense, and capitalization rates, used in the income
    capitalization approach primarily for commercial and industrial
    property.

The procedure used the most factual and objective information as well as
the statistical analyses of the impact of changes in the principal indicators
of value. The procedure also included a review of data and application of the
informed judgment of experienced appraisal personnel who are familiar with the
real estate markets in Boston.

The indexing process adjusts assessed values for principal directions of
market activity, but is not totally reactive to more subtle shifts in values
of properties within the respective classes and locations in the city.
Accordingly, as matter of policy, the final determination of trending factors
included a consistently conservative selection and interpretation of the data.
This accomplishes the dual goals of keeping the overall assessment level near
market level and maintaining inter and intraclass equity of values.
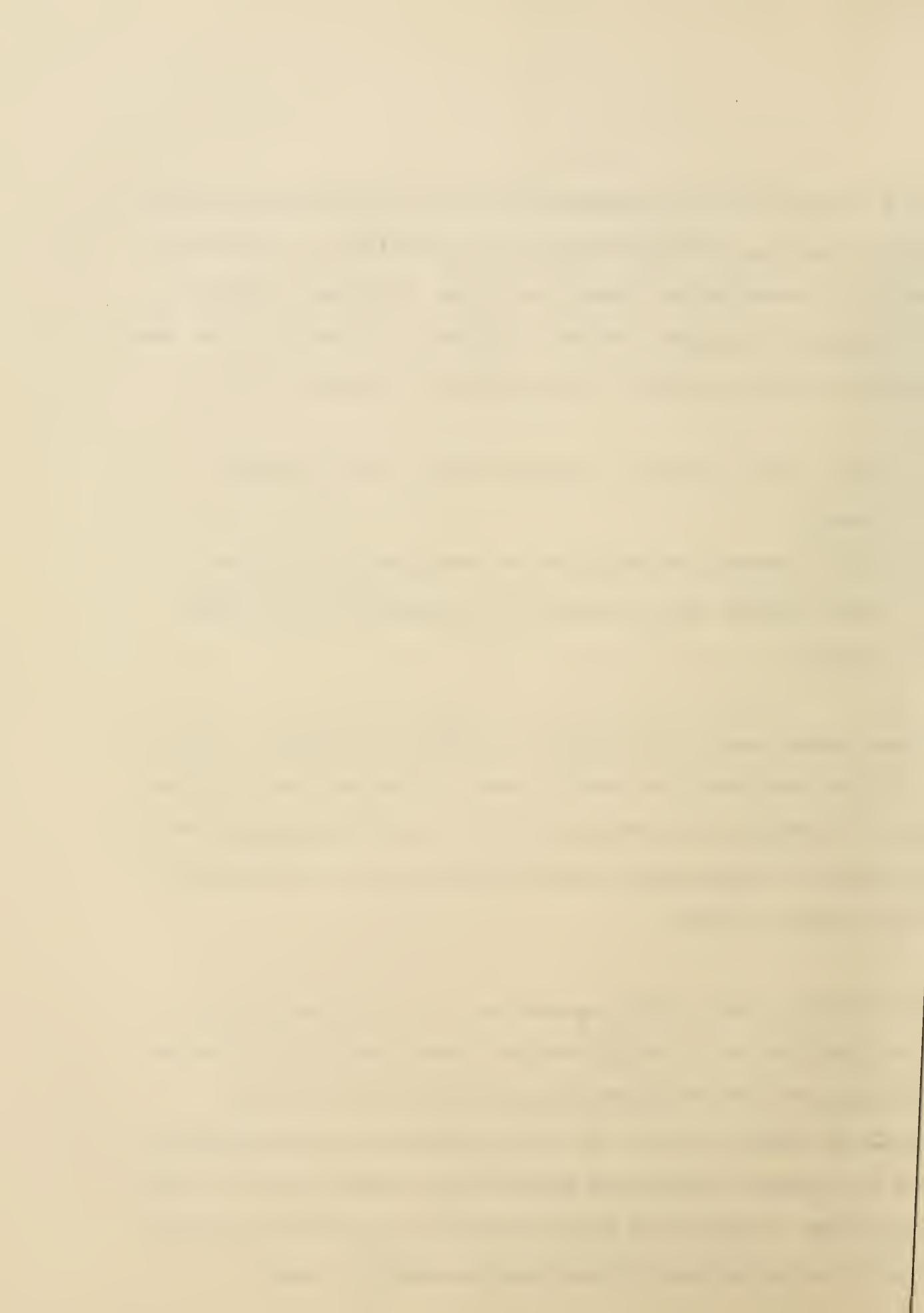
SUMMARY OF PROCEDURES

The property classes for which indexing factors were developed fall into three distinct groups: (a) residential properties in the R1, R2, R3, and CD classes; (b) commercial and industrial properties in the A, R4, RC, C, and I classes; and (c) vacant land (RL and CL).

To simplify report language, properties in the second group of classes are referred to as commercial (in the sense that they are income-producing). The procedures used to develop indexing factors are summarized in the following paragraphs and are described in more detail in later sections of this report.

Residential Property

For the residential classes of property (R1-R2-R3-CD), the procedures focused on the analysis of the sale/assessment ratios and the changes that occurred between the dates under consideration (1/1/86 and 1/1/87). This approach to determining the indexing factors for residential classes was possible because of the meaningful volume of sales during 1986.

A major part in the procedure was the delineation of appropriate neighborhoods or locational stratification for these classes. Such neighborhood delineation is designed to provide for an adequate sample of sales for statistical analysis and to provide comparability of socio-economic and property characteristics. The existing residential assessment districts were assembled into three trending regions for each of the R1, R2, and R3 classes, representing high, medium, and low rates of value increase. The condominium assessment districts were similarly assembled into 3 trending
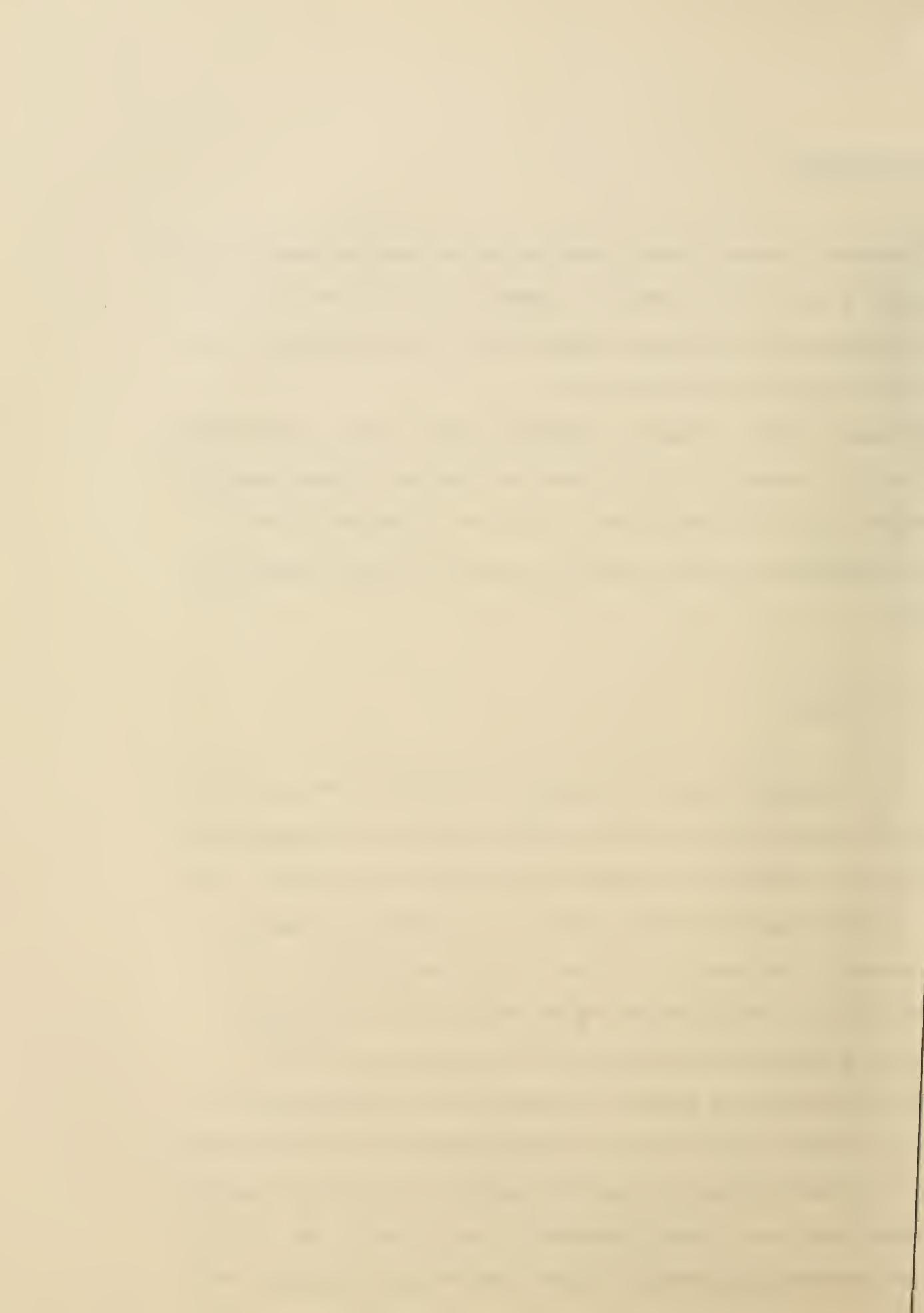
Commercial Property

For the commercial classes of property (A-R4-RC-C-I), two approaches were pursued concurrently, and the results of each were reconciled in the final determination of the indexing factors. The two approaches were to analyze changes that occurred during 1986 in:

1. the factors that are included in the income capitalization approach, and

2. the sale/assessment ratios.

With respect to the stratification by land use, class, and location, sale/assessment ratios were initially separated into 8 categories of specific land use:

1. Apartment (A)

2. 4-6 Unit (R4)

3. Residential-Commercial (RC)

4. Commercial (C)

5. Commercial Condo (CC)

6. Commercial Land (CL)

7. Industrial (I)

8. Commercial Lodging

(Hotels,etc)

Commercial classes of property were additionally stratified into three geographic regions: (1) Downtown and Back Bay, (2) the remainder of the city, (3) Citywide.

The sale/assessment ratios for these strata were used to support and guide value adjustments that were identified by analysis of the income approach factors (specifically the capitalization rate and trends in net operating income).

Vacant Land

Land can be categorized into two types: residential (RL) and commercial (CL). The limited number of sales of vacant land in each category were correlated with trending factors for single family homes for residential land, and with commercial properties for commercial land.

SUMMARY OF CONCLUSIONS

The conclusions from our analysis and development of trending factors for each of the classes of property are summarized in the following paragraphs and are described in detail in later sections of this report.

Residential Property

For this class of property (R1-R2-R3-CD), the indicated assessment
levels and adjustments required to maintain full value assessments varied
among the several classes and regions, as would be expected. This is a
reflection of both the changes in market values and the predominance in some
regions of less than full assessments. The data on sales and assessment
ratios for residential property indicated an overall accelerating increase in
values.

The final market indexing factors are displayed in the chart and graph on the
following page.

Commercial Property

For the commercial class (A-R4-RC-C-I), both the income and
sale/assessment ratio approaches form the basis for valuation.

The income approach to valuation is most affected by the capitalization
rates that are used in the process of value estimation. Changes in these
rates are caused primarily by changes in interest rates. For example,
interest rates decreased in 1986 relative to 1984 and 1985, thereby reducing
cap rates by as much as 7 to 20 percent. These changes are confirmed by data
reported by the American Council of Life Insurance and the Federal Reserve
Board.
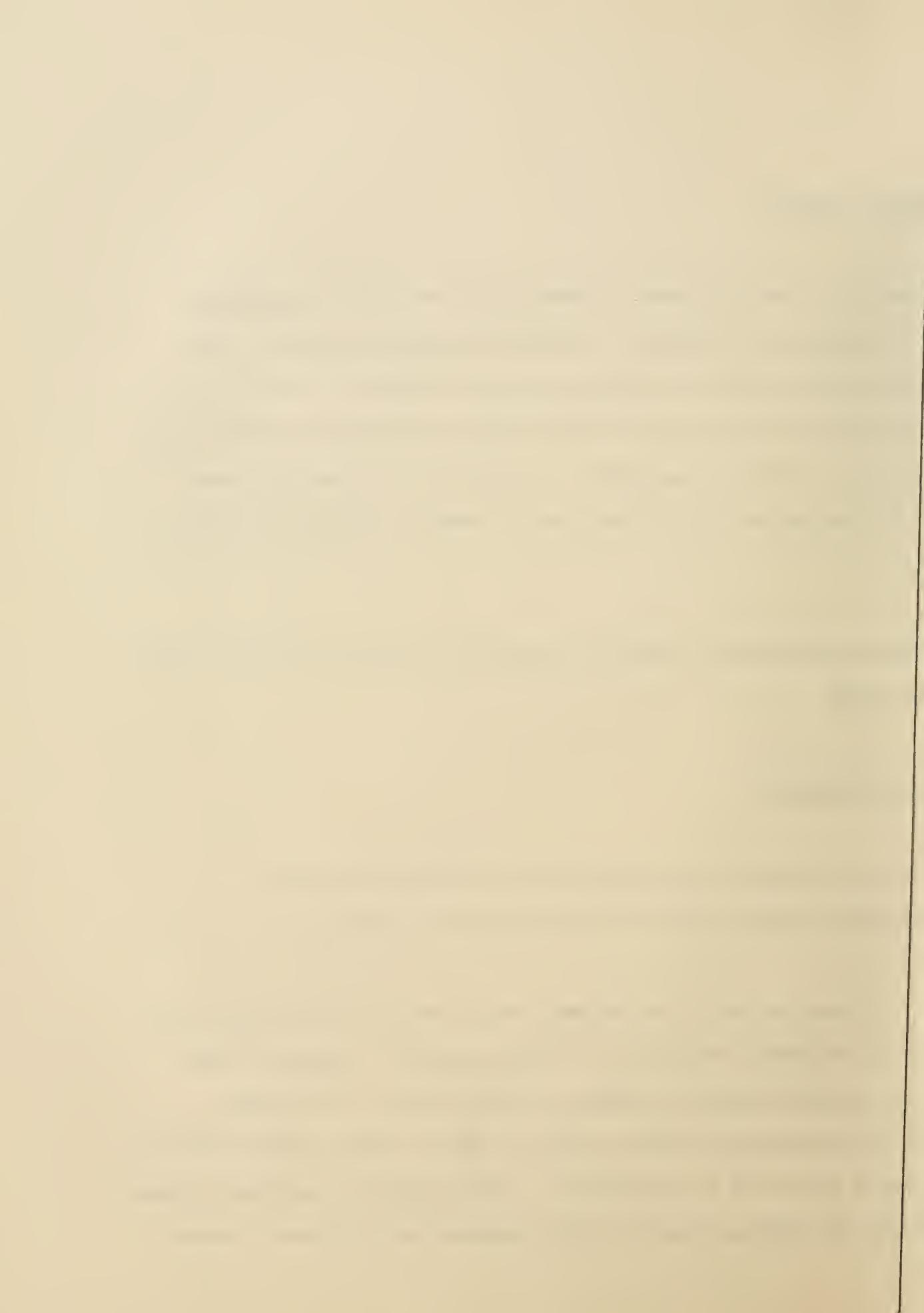
INDEX FACTORS BY RESIDENTIAL PROPERTY CLASS
FOR FISCAL YEAR 1988

Single Family
High	1.28
Med	1.22
Low	1.15

Two Family
High	1.27
Med	1.20
Low	1.16

Three Family
High	1.30
Med	1.26
Low	1.18

Condominium
High	1.27
Med	1.18
Low	1.14

Vacant Land
High	1.28
Med	1.22
Low	1.15

LOW   MEDIUM   HIGH

INDEX FACTORS

1.4
1.3
1.2
1.1
1

CO   R1   R2   R3
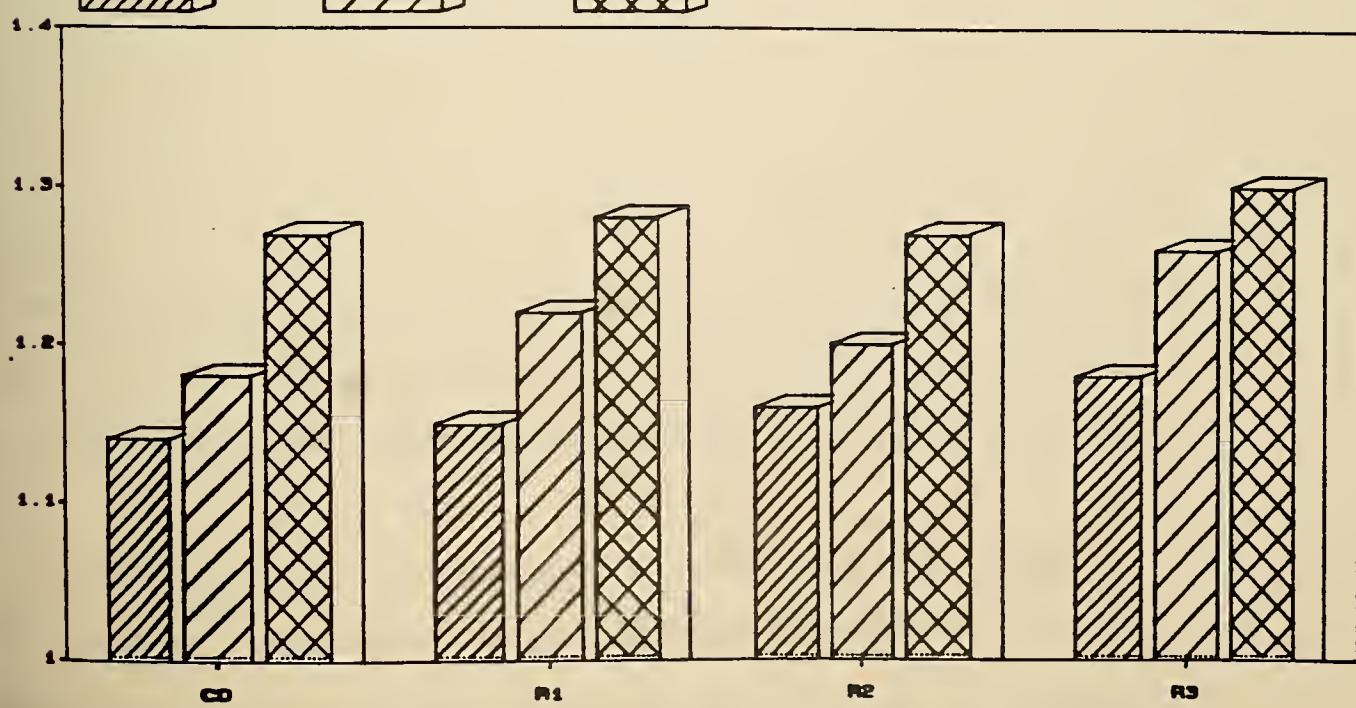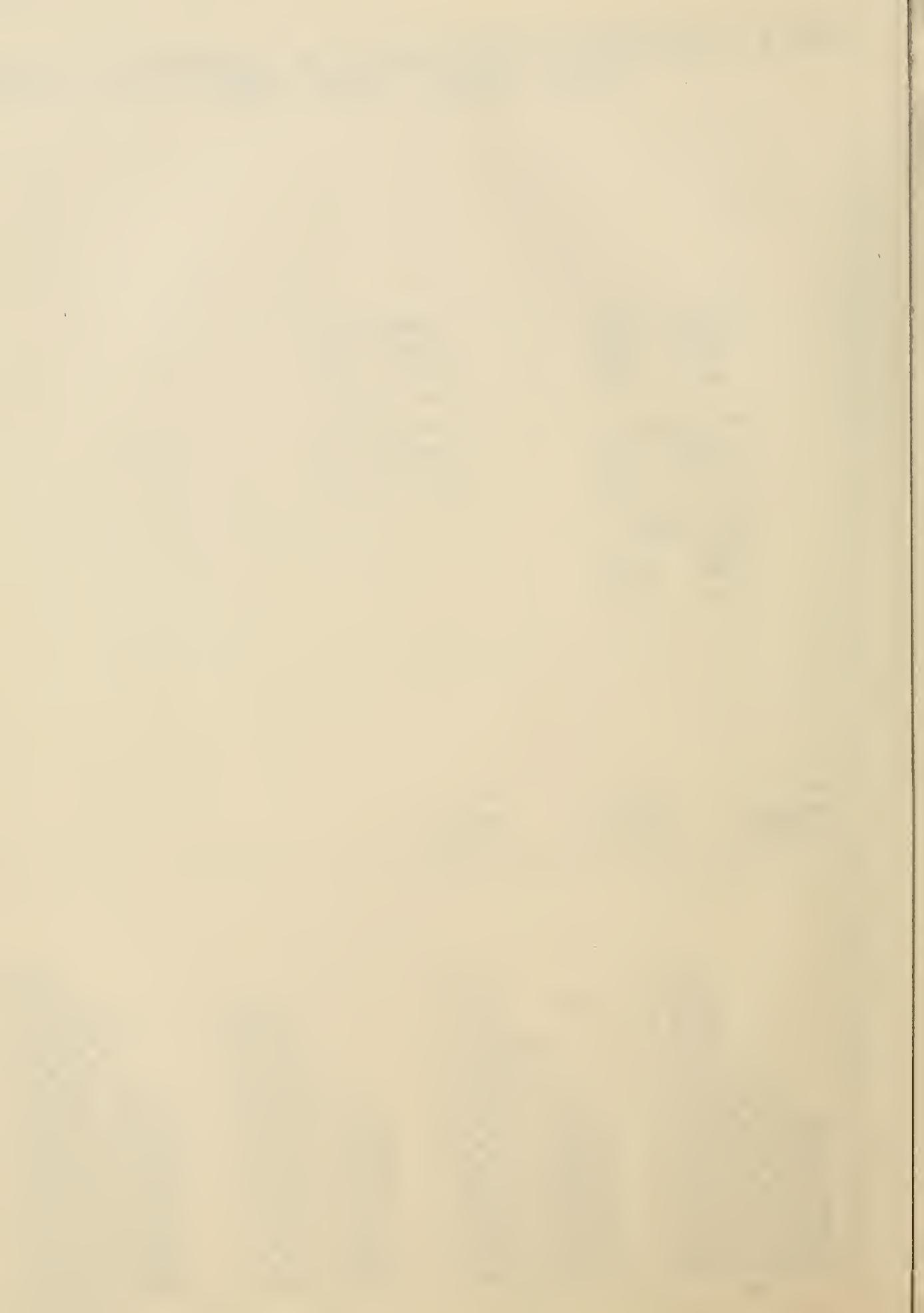
The pattern of increases in value of commercial property indicated by a reduction in capitalization rates is also indicated by the data and analysis of sale/assessment ratios for these types of property.

The final market indexing factors for property in the commercial classes are presented in the following table.

FINAL MARKET INDEXING FACTORS

FOR PROPERTIES IN THE COMMERCIAL CLASSES

Property

class

A	1.22
R4	1.22
RC	1.22
C	1.15
CC	1.20
I	1.10
CL	1.12

Vacant Land

Vacant land parcels are classified according to use: residential (RL) or commercial use (CL). Each RL index factor selected has been based on the market indexing factor for single family properties in its respective impact group.

The indexing factors for the commercial land class were developed by blending the market indicators for commercial classes (A-R4-RC-I-C) for each respective region with market indicators obtained from the analysis of vacant

SECTION 2

MARKET INDEXING PROCEDURES FOR THE

R1 - R2 - R3 CLASSES

MARKET INDEXING PROCEDURES AND DATA FOR R1-R2-R3 CLASSES

INTRODUCTION

The sale to assessment ratio methodology is used in this analysis to determine the market index factors for single, two and three family residential properties (R1, R2, and R3, respectively).

In this analysis, the steps below were followed.

1. Development of a valid sales sample.

2. Calculation of sale to assessment ratios for each valid sale.

3. Determination of time adjustment factors for sales.

4. Calculation of the median time adjusted sale/assessment ratio for each class and neighborhood.

5. Delineation of market trending regions.

6. Evaluation of all statistical indicators.

7. Determination of final factors.

1. DESCRIPTION OF SALES SAMPLE

A total of 2867 sales which occcurred during 1986, were determined to be valid, arms-length transactions. These sales were used as the database for developing all the statistical indicators used to determine market indexes.

Sales Sample for Residential Properties

Property Class	No. of Parcels	No. of Sales	Sales % of Total
R1	29077	1121	3.9%
R2	18611	765	4.1%
R3	15889	981	6.2%

In all statistical procedures, the degree of confidence in the accuracy of the conclusions increases as the size of the sample increases. This sample of sales far exceeds the minimum required for adequate measures of confidence. Furthermore, it is large enough to be divided into smaller samples for each class within each region and still provide for adequate confidence in the statistical conclusions.

1986 DISTRIBUTION OF R1, R2, R3 SALES

1986 R1 SALES RELATIVE TO NUMBER OF PARCELS
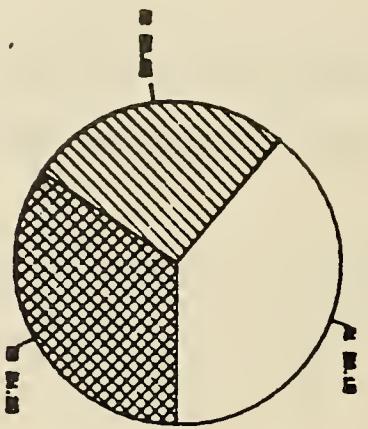
1986 R2 SALES RELATIVE TO THE NUMBER OF PARCELS

1986 R3 SALES RELATIVE TO NUMBER OF PARCELS
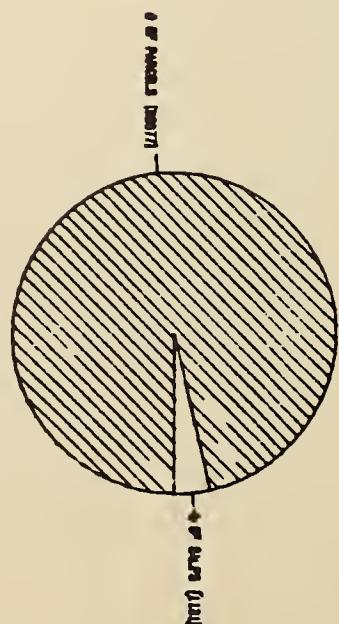
2. CALCULATION OF SALE TO ASSESSMENT RATIO FOR EACH VALID SALE

The second major task in the procedure was to analyze the relationship between valid sales which occurred in 1986 and the assessed value for Fiscal Year 1987 for each class of property in each region.

The principal statistical indicator for measuring the difference between sales price and assessed values is commonly called the "sale to assessment ratio". This is the sale price of an individual property divided by its assessed value. This specific ratio provides a direct indication or guide to the degree of adjustment required to bring assessed values to full market value.

3.   DETERMINATION OF TIME ADJUSTMENT FACTORS FOR SALES

In the erratic real estate market of 1986, residential properties
realized a moderate rate of appreciation throughout the calendar year. The
rate of appreciation was higher during the first half of 1986 than during the
second half.

The data was analyzed on a time basis in order to reflect the
appreciation factor. As such, a time adjusted sale price (TASP) was
calculated. This technique provides stability to the erratic market data for
analysis purposes. It was used during the revaluation for fiscal year 1986 and
for the market indexing of fiscal year 1987.

As a research resource and item of comparison with our own data, monthly
reports of the Federal Home Loan Bank of Boston (FHLB) were reviewed. These
publications present average prices of single family homes sold in the Boston
area month by month. The FHLB standard consolidated statistical area includes
Boston, Lawrence, Haverhill, Lowell and Brockton. In this general Boston
area, the average price of existing single family homes increased by 17.6%
between January, 1986 and December, 1986. The monthly average sale prices are
shown in the chart and graph on the following page, along with median single
family home prices in the City of Boston. The latter figures were calculated
using the Assessing Department's resources.
The average selling price of a Boston single family home increased by 29.4%
from January to December of 1986.
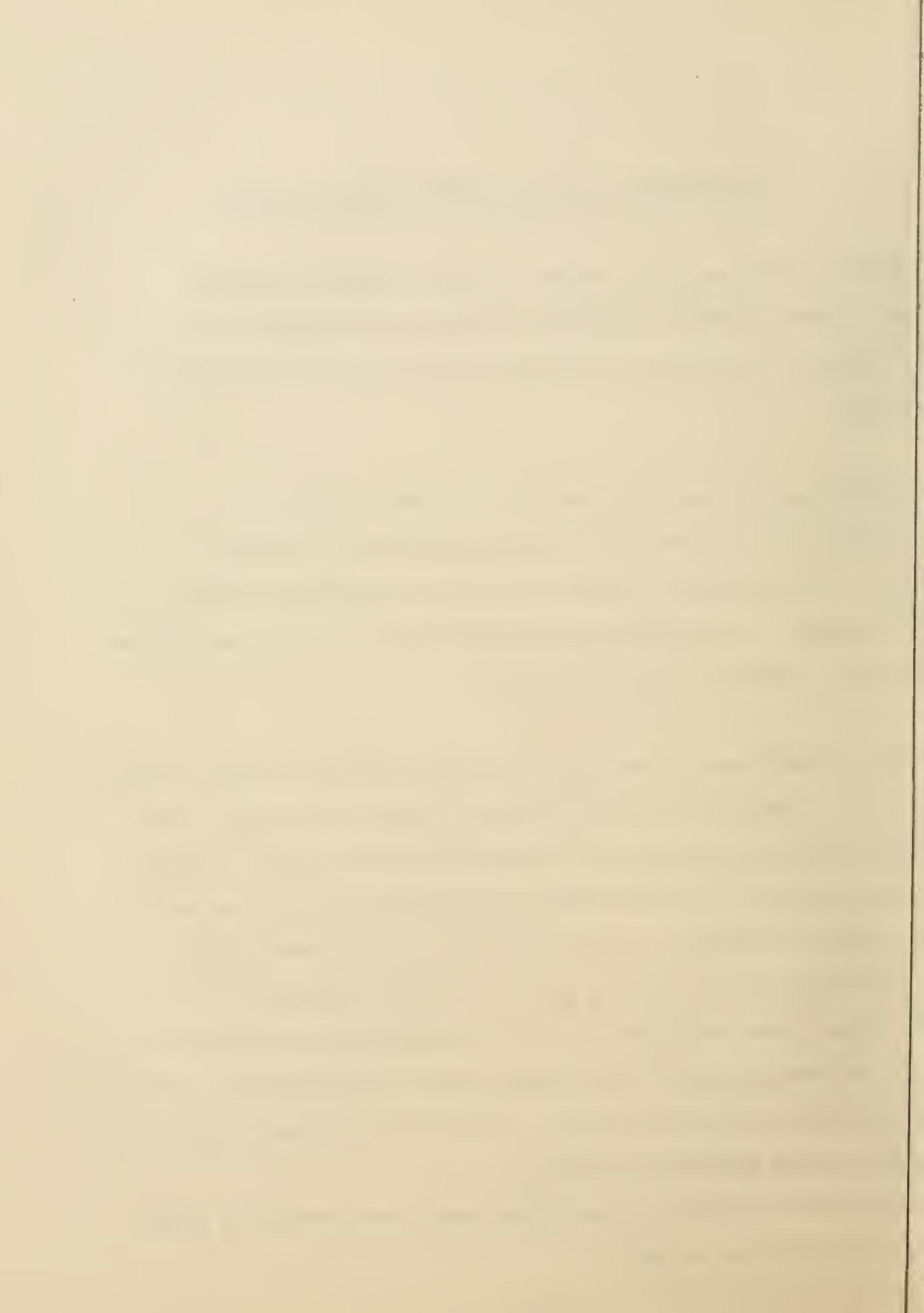
AVERAGE SINGLE FAMILY HOME PRICES
IN THE BOSTON AREA DURING 1986

	CITY OF BOSTON ASSESSING DATA	FHLB DATA
Jan	$ 128,500	$ 134,400
Feb	139,300	136,500
Mar	135,900	144,200
April	130,600	151,100
May	164,900	153,700
June	152,600	156,300
July	161,400	156,200
August	154,000	158,300
September	146,000	151,600
October	164,600	152,500
November	158,000	154,500
December	166,300	158,100

BOSTON ——— FHLB BASA AREAS ——— - ——
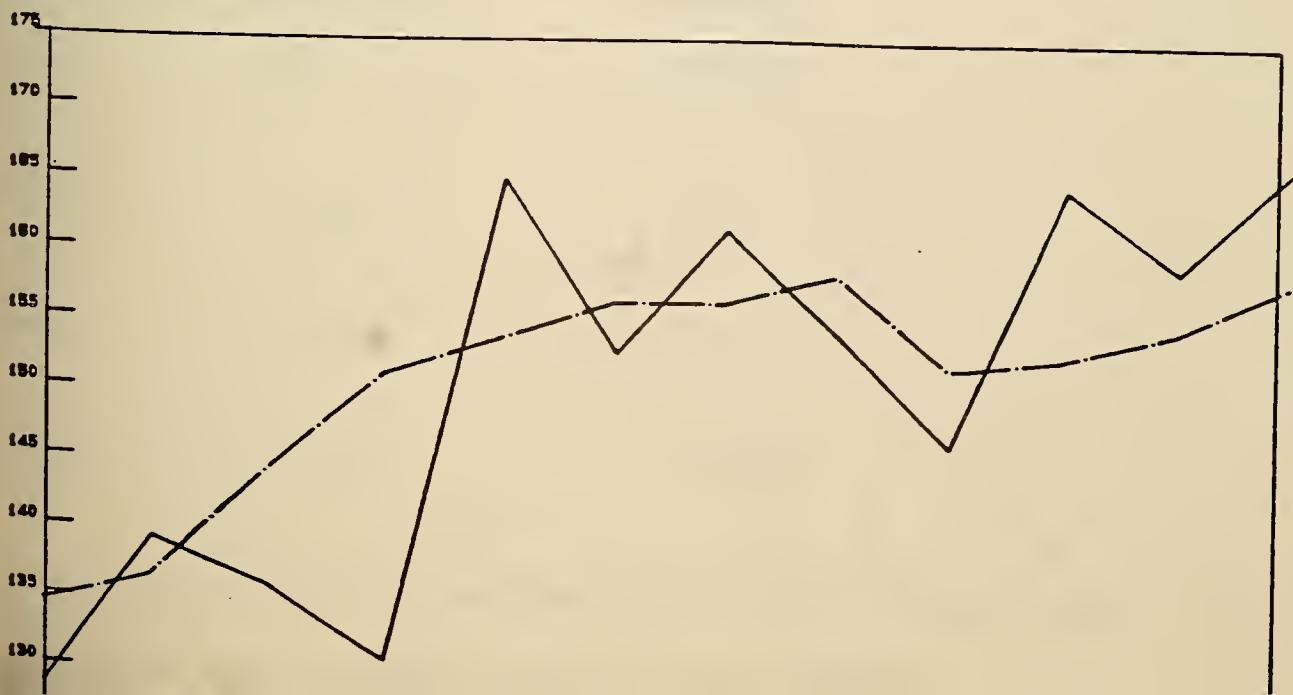
The actual inflation factors used for time adjusting sales of Boston
sidential properties were developed using sale/assessment ratio
thodology. The assessment represents a constant level of market value as of
e first of the year. When the median sale/assessment ratio is plotted from
nth to month, general inflation trends can be tracked. This is graphically
lustrated at the top of the following page.

The result of a comparison between the sale to assessment ratios for the
rst half of 1986 and the second half, which reflect a higher rate of
preciation during the second half, are shown in the chart at the bottom of
e next page.

sed on the previous information, the following factors were used to adjust
le prices:

perty)e	Annual Appreciation Rate	Monthly Percentage Adjustment
gle Family	19.2%	1.6%
Family	14.4%	1.2%
ee Family	22.5%	1.875%

the remainder of this study, the time adjusted sale price (TASP) rather

n the original 1986 raw sale price will be used to determine

MEDIAN SALES/ASSESSMENT RATIOS
R1, R2, R3 PROPERTIES
1986 SALES
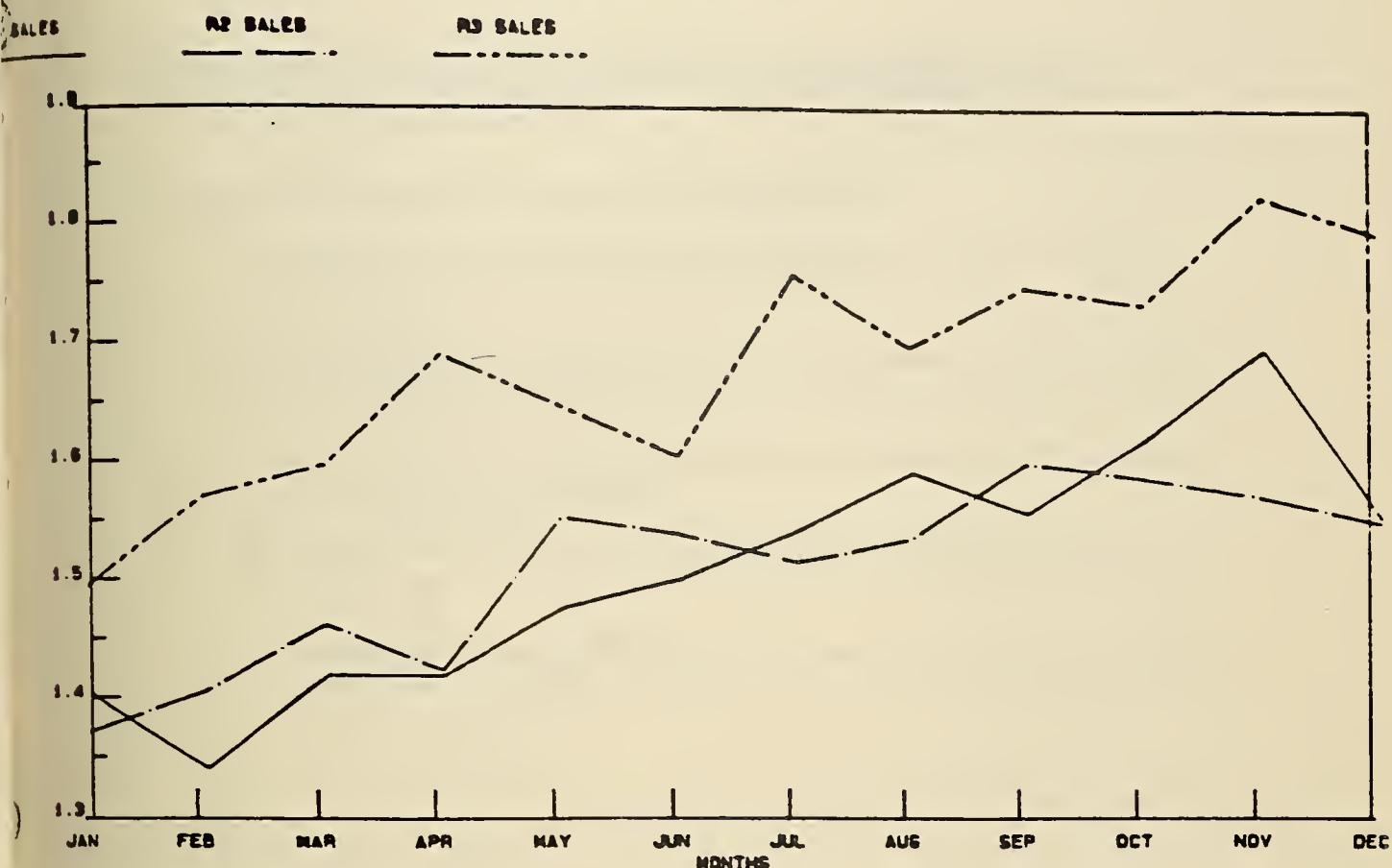
MEDIAN SALES/ASSESSMENT RATIOS
FIRST HALF AND SECOND HALF OF 1986

Property Type	1st. Half Median	2nd Half Median
R1	1.43	1.587
R2	1.448	1.550
R3	1.595	1.761

4 CALCULATION OF MEDIAN TIME ADJUSTED SALE/ASSESSMENT RATIOS FOR EACH CLASS AND NEIGHBORHOOD.

The basic statistical procedure involved were:

a) applying the appropriate time adjustment factor to each valid sale,

b) calculating the adjusted sale to assessment ratio for each parcel sold,

c) segmenting the sales by property type (R1, R2, R3) within each assessment district,

d) ranking the ratios of these segmented sales from low to high, and

e) identifying the median ratio for each property type in each assessment district.

5. DELINEATION OF MARKET TRENDING REGIONS

Our initial analysis of residential sales and sales to assessment ratios indicated that market values increased at distinctly different rates for the respective property types in different sections of the City. The pattern of increases indicated that the different residential assessment districts quite naturally fell into one of three categories, reflecting a high, medium or low rate of increase. Accordingly, we grouped the residential assessment districts into three market trending regions (high, medium and low) for each of the R1, R2 and R3 classes of property. This grouping provides the best basis for determining the appropriate indexing factors for the respective classes and locations of residential property. Additionally, from a technical point of view, each trending region included a sufficient number of sales for meaningful statistical analysis.

It is significant to note that a majority of the residential parcels of property are included in the medium increase group, while lesser proportions are included in the high and low increase groups. The following table shows the number of residential parcels, number of sales , and median sale to assessment ratio for each of the market trending regions for each residential property type (R1, R2 and R3).

Market Trending Region	No of Parcels	No of Sales	Median Sale/ Assessment Ratio
R1 - Single Family			
High	3,732	127	1.70
Medium	19,340	741	1.54
Low	5,987	254	1.38
R2 - Two Family			
High	4,176	171	1.68
Medium	11,067	457	1.50
Low	3,272	141	1.40
R3 - Three Family			
High	3,563	298	1.86
Medium	10,697	572	1.66
Low	1,611	114	1.44

The maps and charts in Appendix 1 show the residential assessment districts in each category.

6. EVALUATION AND INTERPRETATION

The above steps describe the procedures and data used to develop one set of statistical trending indicators: the median time adjusted sale to assessment ratios for each residential property type (R1,R2 and R3) in each market trending region (high, medium or low rates of value increases). These ratios are the principal guides for determining the residential market indexing factors.

As indicated previously, it is a matter of city policy that the final determination of market indexing factors will reflect a consistently conservative selection and interpretation of all the available data. This policy of conservative adjustment through indexing is dictated by several considerations, including the following:

1) Indexing, by its statistical nature, is not capable of reflecting the fine distinctions among individual properties in each class and region and if applied at full measure, would introduce unavoidable inequities among the individual properties within each class/region.

2) The median ratio, statistically, is the mid-point in a range with one half of the ratios (sale sample) above and one-half below the mid-point. Again, if applied at full measure, the assessed values for many of the individual properties would be increased above an appropriate amount and create a disproportionate burden on these properties.

3) In the second year after the last complete detailed revaluation market influences that affect the value relationships among the residential classes/regions could be unreasonably exaggerated by applying the full measure of the median ratios.

With these and related considerations in mind the decision was made to determine the market indexing factors for the respective classes/regions of residential property on the basis partial application of the calculated median ratios for the respective residential class/regions. A percentage adjustment was selected on the premise that the level (or degree) of conservatism should be greater in this second year after the revaluation than in the previous or first year after the revaluation, to minimize any compounding of inequities. In addition to applying a "conservative multiplier" to the median ratios a maximum factor of 1.3 was established. This is a lid of refinement on the indexing adjustments, based on our evaluation of the data. This process of adjustment retains the relative variations that are indicated for the respective residential classes/regions in the first place.

FINAL MARKET INDEXING FACTORS

The final market indexing factors for residential properties in the Rl, R2, and R3 classes for the respective regions, determined in accordance with the above described methodology, are presented in the table below:

FINAL MARKET INDEXING FACTORS
FOR PROPERTIES IN THE RI, R2, AND R3 CLASSES

GROUPING	MARKET INDEXING FACTORS
Single Family High	1.28
Single Family Medium	1.22
Single Family Low	1.15
Two Family High	1.27
Two Family Medium	1.20
Two Family Low	1.16
Three Family High	1.30
Three Family Medium	1.26
Three	1.18

SECTION 3

MARKET INDEXING PROCEDURES

FOR THE

CONDOMINIUM CLASS (CD)

MARKET INDEXING PROCEDURES AND DATA FOR THE CONDOMINIUM CLASS

INTRODUCTION AND SUMMARY OF PROCEDURES

The sale-to-assessment ratio approach was followed to determine the
market index factors for condominiums. The procedures were essentially the
same as those for the R1, R2, and R3 residential classes.

In view of the similarity of methodology, the following sections
highlight only the differences specific to condominiums. For a detailed
description of the methodology, please refer to Section 2.

DESCRIPTION OF SALES SAMPLE

The sample of 5244 sales represents almost one fourth of the total of
21476 condominium properties.

DETERMINATION OF TIME ADJUSTMENT FACTOR FOR SALES

Condominiums, similarly to residential R1, R2 and R3 properties, appreciated inconsistently yet moderately throughout 1986. The median sale to assessment ratios were analyzed on a monthly basis to determine the magnitude of the appreciation reached by the end of the year (see following graph).

MEDIAN SALES/ASSESSMENT RATIOS
CONDOMINIUM PROPERTIES
1986 SALES
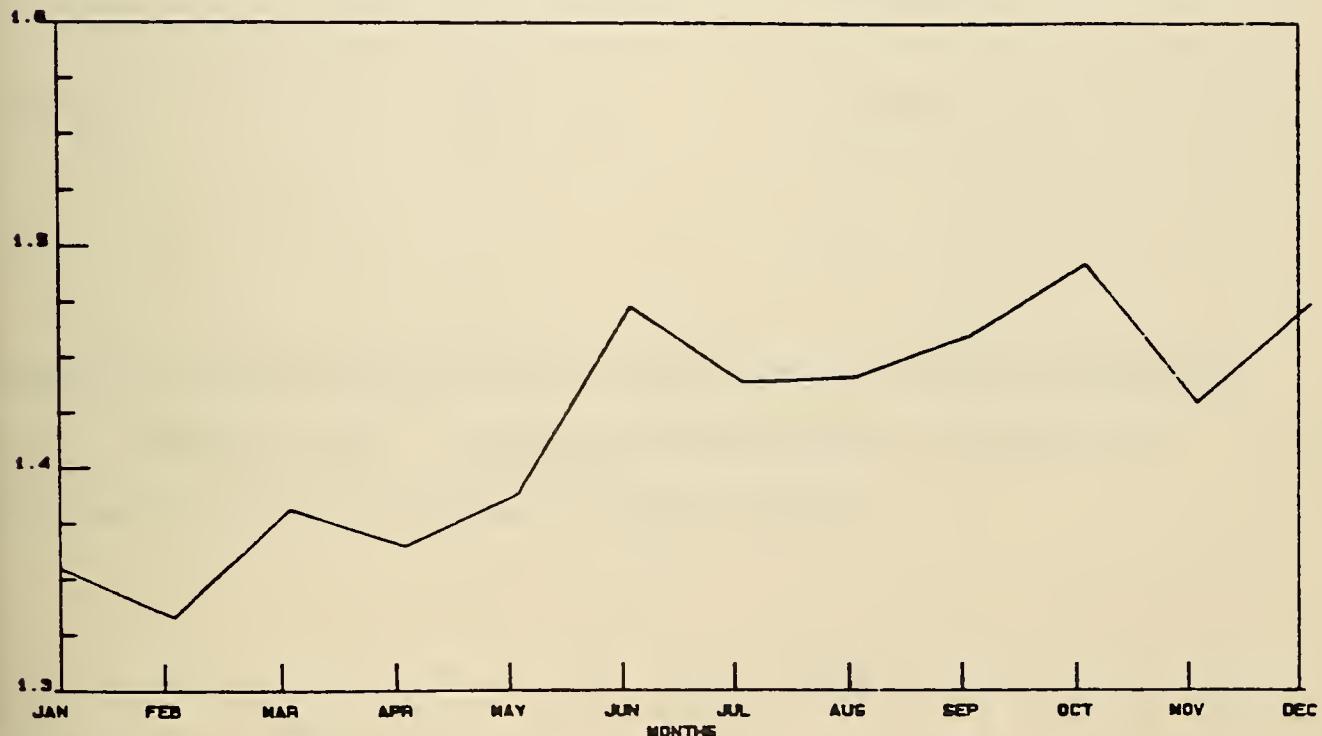
The following are the results of comparing the median sale to assessment ratio for the 1st half of 1986 to that for the second half of 1986:

1st half Median	2nd half Median	Indicated Annual Inflation
1.410	1.473	8.94%

The decision was made to adjust all sale prices using a 9% annual appreciation rate, i.e., 0.75% per month. The following table presents the median time adjusted ratios for each condominium assessment district.

MEDIAN TIME
ADJUSTED SALE TO ASSESSMENT RATIOS
RESIDENTIAL CONDOMINIUM PROPERTIES

(1986 SALES)

ASSESSMENT DISTRICT	MEDIAN RATIO%	No. of SALES
1	1.265	98
2	1.413	202
3	1.411	290
4	1.459	209
5	1.288	87
6	1.469	145
7	1.586	105
8	1.210	20
9	1.560	461
10	1.452	229
11	1.759	8
12	1.472	325
13	1.366	180
14	1.260	243
15	1.270	81
16	1.690	639
17	1.384	1157
18	1.378	241
19	1.538	37
20	1.524	66
21	1.688	95
22	1.380	180
23	1.433	103
24	1.436	43

TOTAL SALES 5244

DELINEATION OF MARKET REGIONS

In a manner similar to the residential procedure, market trending regions were defined to achieve the greatest internal consistency of economic and property characteristics as well as sufficient numbers of sales for valid statistical analysis. This process delineated three regions. A map showing the condominium market regions is included as Exhibit RES-5 in Appendix 1.

FINAL MARKET INDEXING FACTORS

The final market indexing factors for condominiums, determined in accordance with the same conservative methodology used for the R1, R2, R3 classes, are presented in the table below:

FINAL MARKET INDEXING FACTORS FOR PROPERTIES

in the RESIDENTIAL CONDOMINIUM (CD) CLASS

Condo Region	Indexing Factor
High	1.27
Medium	1.18
Low	1.14

SECTION 4

MARKET INDEXING PROCEDURES
AND DATA FOR THE
COMMERCIAL, INDUSTRIAL & APARTMENT CLASSES
(A - R4 - RC - C - I)

MARKET INDEXING PROCEDURES AND DATA FOR COMMERCIAL PROPERTY

INTRODUCTION

In developing market indexing factors for commercial properties in the A, R4, RC, C and I classes, two distinctly different approaches were pursued and evaluated. The results of both were reconciled to establish the market indexing factors for these classes. The two approaches used to estimate property values are: (1) the income capitalization approach, (2) sales/assessment ratio approach.

The income capitalization approach to value (referred to herein as the "cap rate" or "income approach") is the primary method used by appraisers and assessors to value income-producing property. Since real estate values are constantly changing according to a wide range of factors in the economy and the marketplace, the income approach is particularly well-suited to estimate property value. This method identifies, measures and utilizes those economic factors and forces that determine real estate value. These factors, which include income levels, investment expectations and certain financial elements (e.g. interest rates) often change from year to year.

The use of the income approach as a tool for evaluation and measurement of market values makes it possible for this department to re-evaluate property values each year and thus stay current with the assessment of all property.

The sales analysis approach is essentially the same as described previously for the residential classes of property. This approach compares sales prices with assessment levels and produces sale/assessment ratios, which then serve as indicators in the development of market indexing factors.

The procedures and data as well as the conclusions from these two approaches are described in the following pages. It is appropriate at this point to consider the real estate market itself, in terms of the current appreciation of commercial property values in Boston.

Current Market Analysis

Because there are fewer sales of commercial properties relative to residential properties (single-family, two-family and three-family houses), it is important to examine general trends in the market itself. The existence of a meaningful pattern of market appreciation lends support and validity to the income capitalization and sales-ratio analyses that follow.

One of the most common units of measure used in the analysis of real estate values and also in assessment administration is value-per-square foot of building area. This measure is also used to track changes in property value from year to year, by using sales that occur during each year.

In order to mark the trends of commercial property value in Boston, a sales/square foot analysis was performed. First, the commercial sales were segregated by class into two major groups. All commercial and industrial sales were combined into one group, and all of the apartment, R4 and RC sales were combined into another group. The sales were further stratified by location: (a) Downtown and Back Bay, which comprise the Central Business District (CBD), and (b) the outlying districts.

The table and graph on the following page show the median sale price-per-sq. ft. of fair market sales that occurred during the years 1983 through 1986. The percentage difference from year to year (for each group) indicates the general rate of market appreciation of that property type.

MARKET APPRECIATION: % PER YEAR *

	Prop. Type	Citywide	Downtown	Outlying
1985	C, I	22.5%	44.6%	20.8%
	A, R4, RC	30.8%	49.7%	36.5%
1986	C, I	33.9%	35.0%	31.3%
	A, R4, RC	29.9%	25.0%	28.1%

(* Percentages based on median sale $ per sq. ft.)

Table C-1   MARKET APPRECIATION

BOSTON REAL ESTATE VALUES

MEDIAN SALE $$ PER SQUARE FOOT OF BUILDING AREA

YEAR	PROPERTY TYPE	CITY WIDE TOTAL	CENTRAL BUSINESS DISTRICT	OUTLYING AREA
1983	C, I	$ 21.46	$ 48.60	$ 22.36
	A, R4, RC	$ 21.16	$ 42.65	$ 16.41
1984	C, I	$ 28.47	$ 64.35	$ 25.41
	A, R4, RC	$ 28.75	$ 55.78	$ 22.78
1985	C, I	$ 34.86	$ 93.06	$ 30.70
	A, R4, RC	$ 37.60	$ 83.53	$ 31.09
1986	C, I	$ 46.70	$125.58	$ 40.31
	A, R4, RC	$ 48.83	$104.39	$ 39.83

COMMERCIAL MARKET APPRECIATION
SALES $$ PER SQ.FT OF BUILDING AREA

C & I: (CBD)   R4, A, RC : (CBD)   C & I: CITYWIDE   R4, A, RC: CITYWID
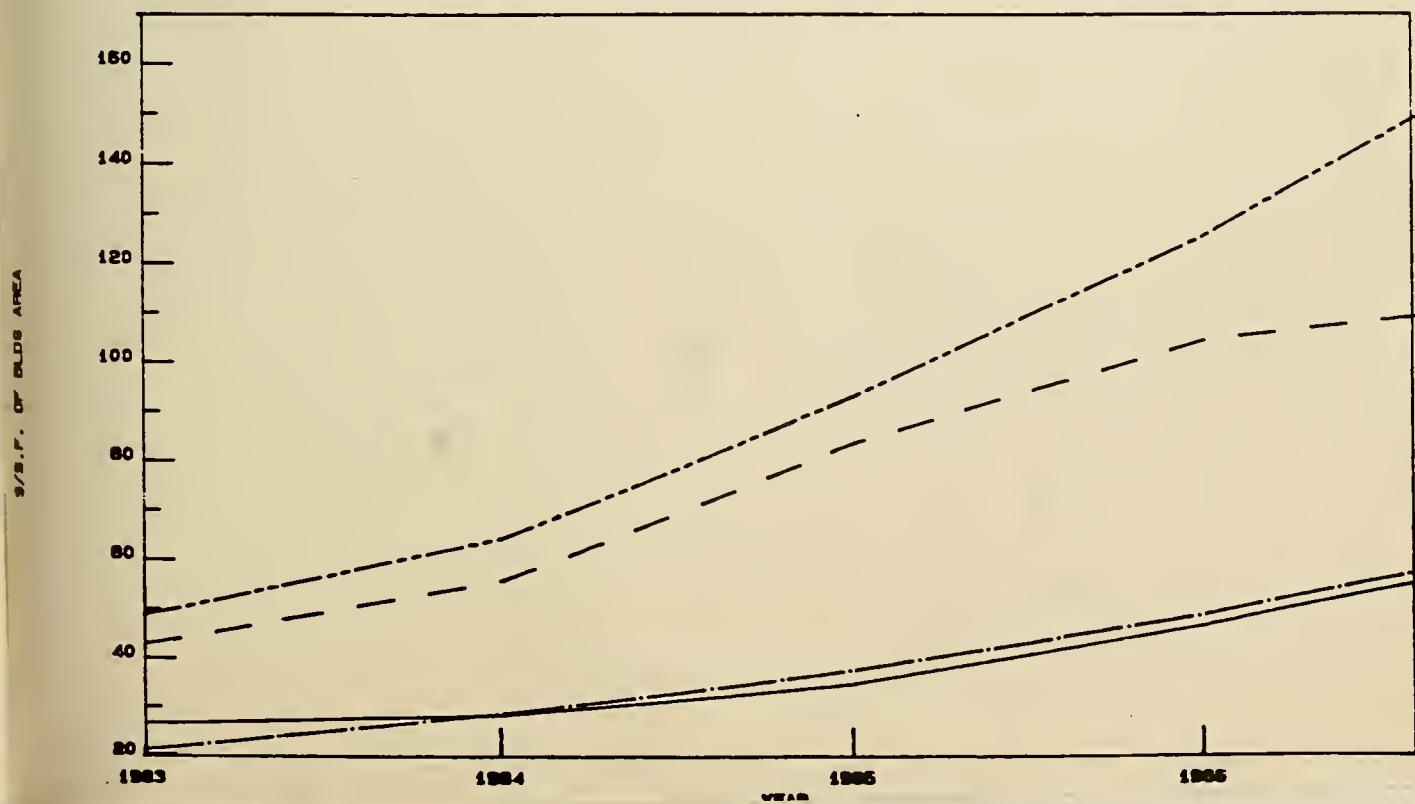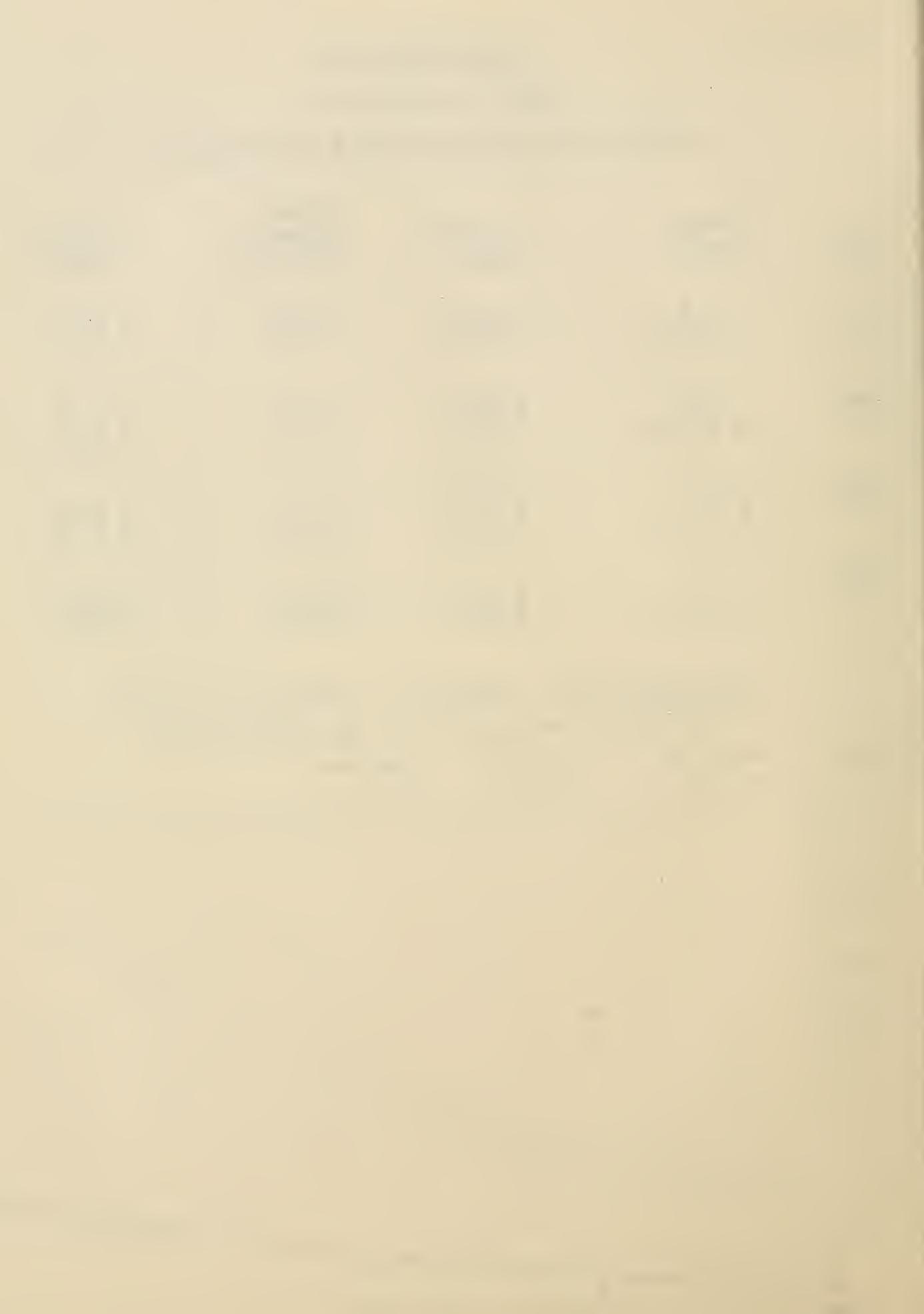
INCOME CAPITALIZATION APPROACH

The basic procedure in the income capitalization approach included the following major steps:

(1) Review and measure changes in rents and operating expenses over the past several years to identify possible shifts in the level of net operating income, which can affect the estimate of value produced via the income approach.

(2) Review and measure changes in the capitalization rate elements including interest rates, return on equity, effective tax rate, investment holding period, market appreciation and other financial factors. Compare any resultant changes in estimated capitalization rates with similar data from industry published sources.

(3) Establish appropriate capitalization rates, calculate estimated property values as of 1/1/86 and 1/1/87, and compute percentage changes in value from 1/1/86. Analyze the percentage changes in value and determine the range of indexing factors for commercial and industrial property.

(4) Analyze the indicated range and establish the appropriate indexing factor for each type of property.

The main steps outlined above are detailed in the following sections:

(1) Income and Expense Data

Current information on rents, expenses and vacancy rates for Boston is obtained from multiple sources. These include our own files of income and expense data, compiled each year from information submitted by property owners, as well as published surveys from local real estate companies such as Spaulding & Slye, Leggat & McCall, Meredith & Grew, and Cushman & Wakefield. Specific data was also obtained from the Building Owners and Managers Association (BOMA) and the Institute of Real Estate Management (IREM), two nationally-recognized organizations that analyze income and expense data for every large metropolitan area in the country.

According to these published reports which track data on specific buildings in downtown Boston from year to year, rent increases during 1986 were reported in the range of 3% to 9%, with a median increase of approximately 5%.

The national surveys of BOMA and IREM report rent increases for Boston during 1986 to be in the range of 5-6% for office space alone, and 8-10% for total income, including rents for retail space, parking and miscellaneous income.

Building operating expenses, which are analyzed and measured by BOMA and IREM, have also risen, but have remained constant as a percentage of gross income.

The "Real Estate Report", published quarterly by the Real Estate Research Corporation, (Chicago, Ill.) confirms annual growth rates for office income and expenses to be in the 4% to 5% range during the period from late 1985 through the 1st quarter of 1987.

Although vacancy rates have generally stabilized in the greater Boston market during the past 1-1/2 years, the absorption rate in downtown Boston has remained strong, resulting in a slight decline in the vacancy rate during 1986. However, the amount of new construction currently in progress in downtown Boston has kept asking rental rates for new space at relatively stable and constant levels.

The previously mentioned published surveys usually focus on the larger properties that are located in the central business district of the City, and describe the current market rental experience of certain properties. Since it is equally important for this department to monitor the income and expense levels of all commercial property, regardless of location, several methods are employed in an on-going process to track current income-expense data. These include regular field inspections, periodic data collection of all property and annual income-expense request forms which are submitted by property owners.

A recent analysis of commercial property throughout the City shows that current market rents exceed the market rents established for the FY'86 revaluation on an average of 20-25%. The FY'86 valuation date is January 1, 1985, whereas the FY'88 valuation date is January 1, 1987. In view of these findings, an increase to our FY'86 rent levels of 10% is justified and at the same time conservative. The increase to rental income affects the computation of the income approach to value, which is discussed further in the text.

(2) Money Market Rates and Capitalization Rates

Current monetary rates are among the economic factors that directly impact the real estate market. In the appraisal of real estate value, the correlation between the changing financial elements of the economy and the quantitative measurement of a property value is accomplished by the use of a composite number called a capitalization rate. The "cap rate" acts as the ratio between the current income stream of a property and the full market value of that property.

By nature, capitalization rates (as used in the income approach to value) are influenced most significantly by three factors: (1) interest rates, (2) rates of return on investment capital, and (3) the risk factor in real estate. Because of the major influence of interest rates upon capitalization rates, and because it is known that interest rates in 1986 have declined since 1985, our principal focus was to identify the impact on cap rates and therefore on the market value of commercial property.

Exhibit COM - 1, in Appendix 2 of this report, presents the historical data on interest rates and "safe" rates of return. This data was obtained from the official publications of the Federal Reserve Board. These tables show the quoted monthly rates during 1985, 1986 and 1987, of seven accepted indicators of mortgage rates and investment return rates (also known as "return on equity").

Besides measuring average rate changes from year to year, it is important to monitor the last half-year rate activity, immediately preceeding the valuation date of January 1st. This is because an accelerated shift in monetary rates over a six-month period can have a marked effect on the real estate market, while the annual averages alone would tend to lessen the degree of change from the previous year. The semi-annual (July-December) and annual averages of these rates over two years are shown on the following pages.

It is evident from this data that interest rates were somewhat lower in 1986 than in 1985 and previous years, and also that the interest rates remained stable at a relatively low level during the first quarter of 1987. Although the 1986 annual mortgage rates declined 17.6% from 1985, the last 6-month average rates declined 19.8%, a slightly faster pace. This difference is not considered significant, but any change, either short term or long term, has a potential impact on real estate value.

Average Annual Interest Rates

Mortgage Rate Indicators	Interest Rates 1985	1986	'85 to '86 Percent Change
Prime Rate	9.93%	8.33%	-16.1%
Discount Rate	7.69	6.33	-17.7
FHA Mortgage Rate	12.24	9.91	-19.0
Average	9.95	8.19	-17.6
Low-risk Investment Return Indicators			
Corp. AAA Bonds	11.37	9.02	-20.7
5 Yr. Treas. Notes	10.13	7.31	-27.8
Fed. Funds Rate	8.10	6.81	-15.9
90 Day CDs	8.05	6.52	-19.0
Average	9.41	7.42	-21.0

Average Interest Rates: July - December of Each Year

(Changes From 1985 to 1986 last 6 months only)

	1985	1986	Change
Prime Rate	9.50%	7.68%	- 19.2%
Discount Rate	7.50	5.66	- 24.5
FHA Mortgate Rate	11.67	9.66	- 17.2
Average	9.56	7.67	- 19.8
Low-risk Investment Return Indicators			
Corp. AAA Bonds	10.80	8.75	- 19.0
5 Yr. Treas. Notes	9.50	6.84	- 28.0
Fed. Funds Rate	8.00	6.24	- 22.0
90 Day CDs	7.81	5.92	- 24.2
Average	9.03	6.94	- 23.1

AVERAGES

Averages, Percent Per Annum

Instrument	1984	1985	1986	1987	% Change '85 to '86	% Change '86 to '87
Federal Funds	10.22%	8.10%	6.81%	6.44%	- 16%	- 5.4%
Discount	8.80%	7.69%	6.33%	5.83%	- 18%	- 7.9%
CD - 3 month	10.37%	8.05%	6.52%	6.43%	- 19%	- 1.4%
US Treas-5yr	12.24%	10.13%	7.31%	7.35%	- 28%	0
Corp AAA	12.71%	11.37%	9.02%	8.77%	- 21%	- 2.8%
Mortgage Market Secondary Market						
FHA Mortgages (HUD series)	13.81%	12.24%	9.91%	9.58%	- 19%	- 3.3%
Prime Rate	12.04%	9.93%	8.33%	7.77%	- 16%	- 6.7%

(* 1987 averages based on 1st 6 months only)

Description of Instruments:

MONEY MARKET RATES
Certificates of Deposit, Secondary Market, 3 - month
Discount Window Borrowing
Federal Funds

CAPITAL MARKET RATES
U.S. Treasury notes and bonds, constant maturities, 5-year
corporate bonds, seasoned issues, AAA

AVERAGE ANNUAL INTEREST RATES

PRIME   DISC   FHA MTG   CORP Aaa   T NOTE   CD

AVG INTEREST RATE (%)

15
14
13
12
11
10
9
8
7
6
5

1983   1984   1985   1986   1987
YEAR
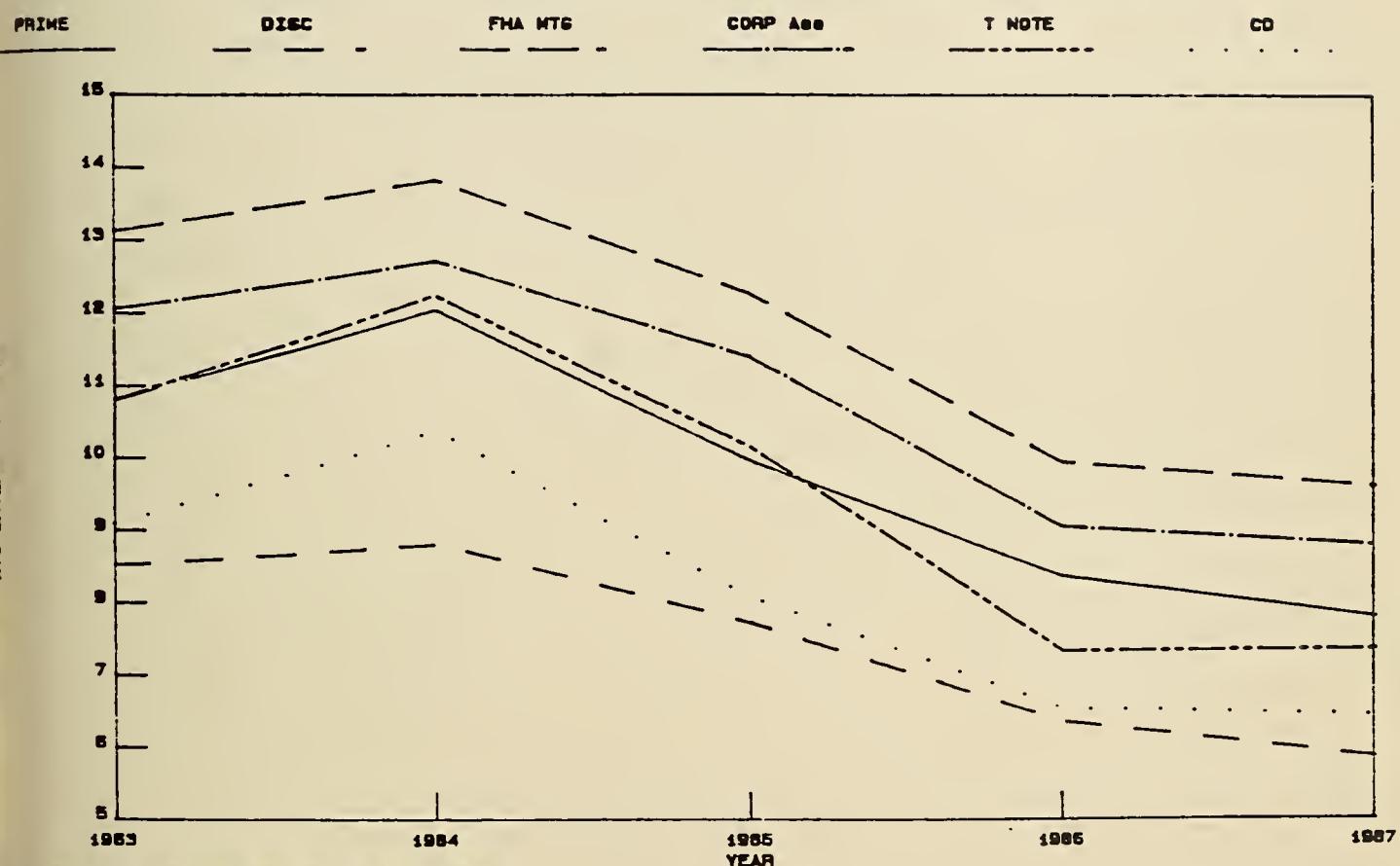
1987 AVERAGES ARE BASED ON 1ST 6 MONTHS ONLY

CAPITALIZATION RATES

The cap rates developed for FY'88 valuation were calculated on the basis of a standard mortgage-equity formula. This method uses the average interest rates for 1986, less a credit for equity build-up and appreciation over the holding period (which is affected by the element of risk), plus the effective tax rate. Additionally, variables such as loan-to-value ratio and holding time of investment were obtained from an extensive FY'86 survey of Boston-area banks that specialize in commercial lending.

Using the averages of the mortgage rate indicators and the investment (equity) return indicators as well as the appropriate effective tax rate, the cap rates were calculated as of 1/1/87 and compared to 1/1/86. The average cap rate for commercial property as of 1/1/86 was 12.06%. The average cap rate for 1/1/87 is 11.18%, or a difference of 7.3%. This compares closely with the ACLI cap rate experience, which shows a difference of -7.9% between the 1985 and 1986 average cap rates.

The cap rates that will be used to develop FY'88 market indexing factors are listed below, along with the FY'87 cap rates.

Property Type	FY'87 Cap Rate	FY'88 Cap Rate
Apartment	8.9%	7.1%
Industrial	14.1%	13.2%
Lodging	14.3%	13.9%
Office	11.0%	10.5%
Retail	12.0%	11.2%
Average for all Commercial property	12.06%	11.18%

To check and support these calculated changes in cap rates, they were compared with cap rates published by the American Council of Life Insurance (ACLI) (Exhibit COM - 2). The cap rates and interest rates reported here are the result of actual mortgage commitments being made on a continuous basis by 20 major Life Insurance Companies. Since they are after-the-fact results from major transactions, they furnish a sound basis for comparison and support of the cap rates used in Boston.

The following graph shows the correlation between mortgage interest rates and actual capitalization rates, as experienced by the ACLI.

ORTGAGE INTEREST RATES & CAPITALIZATION RATES
AMERICAN COUNCIL OF LIFE INSURANCE

A.C.L.I. MORTGAGE COMMITMENTS (CONTINUOUS BASIS)
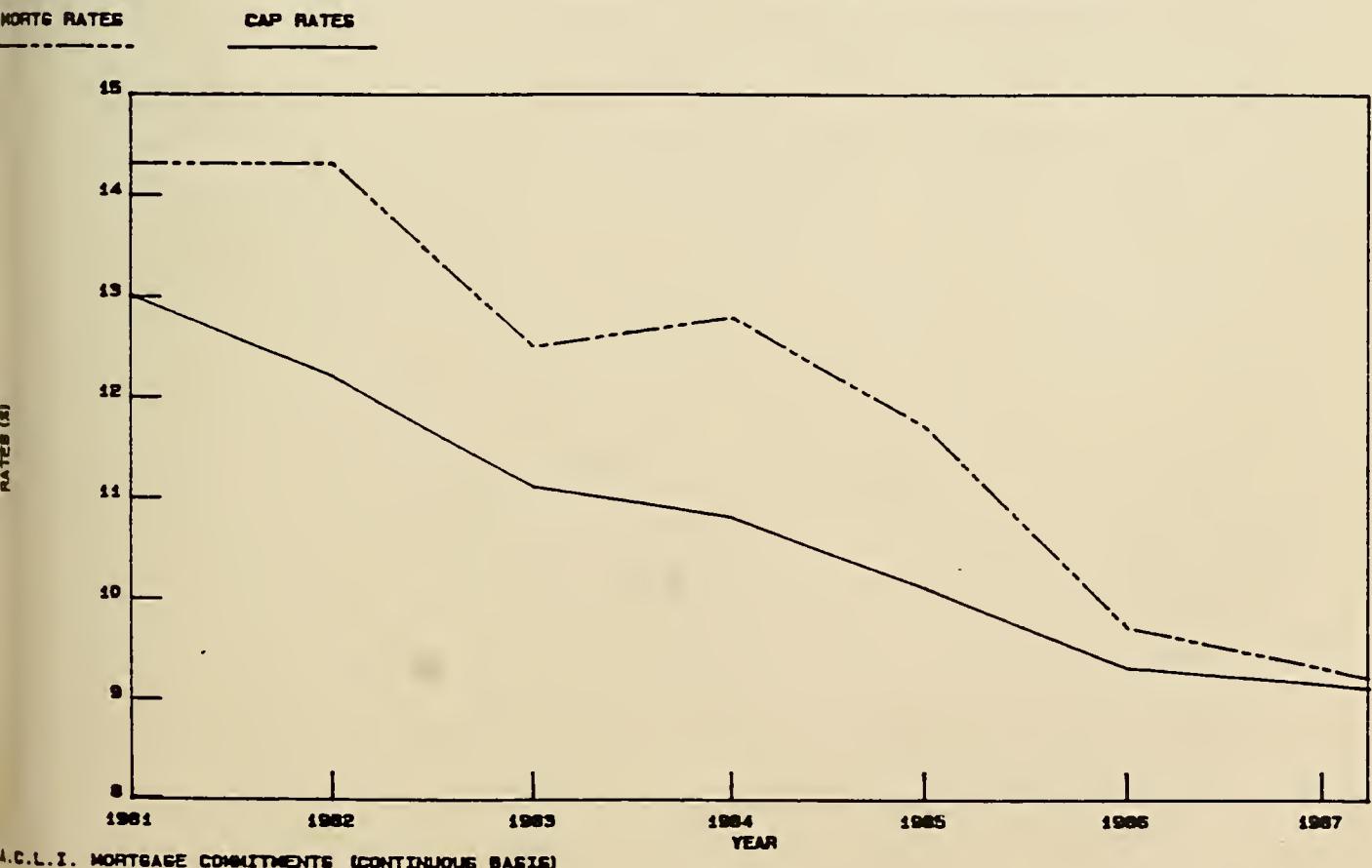
(Graph Com - 3)

AMERICAN COUNCIL OF LIFE INSURANCE

MORTGAGE COMMITMENT EXPERIENCE

Year		MORTGAGE RATES		CAPITALIZATION RATES	
		National	Boston Area	National	Boston Area
1981	:	14.3%		13.0%	
1982	:	14.3%		12.2%	
1983	:	12.5%		11.1%	
1984	:	12.8%	12.9%	10.8%	11.3%
1985	:	11.7%	11.8%	10.1%	10.4%
1986	:	9.7%	9.4%	9.8%	8.9%
1987 (1st Quarter)	:	9.2%	9.1%	9.1%	9.2%

Nationally, capitalization rates averaged 9.3% for the fourth quarter of 1986, and 9.1% during the first quarter of 1987. The cap rate of 9.1% is the lowest since 1968, according to the American Council of Life Insurance.

To determine the indexing factor for commercial property using the cap rate approach, the income approach was recalculated with revised cap rates to estimate the value of property as of 1/1/87, and then the percent increase in value from 1/1/86 was computed.

The methodology for developing trending factors from the cap rate approach is briefly summarized as follows:

Property record cards were randomly selected from each type of property. The net operating income (NOI) from each record card was then increased by 10%, based on the analysis discussed earlier in this report. The newly computed FY'88 capitalization rate was then applied to the increased NOI, and a new value was generated for the sample properties.

The chart below illustrates the sequence of steps that are used to develop trending factors for FY'88.

Steps: (A)   The FY'87 N.O.I. is increased by 10%.

(B)   The new FY'88 N.O.I. is divided by the new FY'88 cap rate to produce the new FY'88 value (for each property);

(C)   The FY'88 value is compared to the actual FY'87 assessment, and the percentage change represents the appropriate market index factor.

Change in Value and Market Index Factors

PROPERTY TYPE	(former) FY'87 N.O.I.	(new) FY'88 N.O.I.	FY'88 CAP RATE	NEW FY'88 VALUE	FY'87 VALUE	PERCENT INCREASE IN VALUE	MARKET INDEX FACTOR
Apartment	36,691	40,360	7.13%	566,000	419,900	34.8%	1.34
Industrial	94,958	104,450	13.23%	789,500	678,000	16.4%	1.16
Office	98,888	108,780	10.50%	1,036,000	932,000	11.2%	1.11
Retail	67,500	74,250	11.16%	665,300	579,000	14.9%	1.15

Sale/Assessment Ratio Approach

This second approach to determining the market indexing factors for commercial properties (A,R4,RC,C,I) is essentially similar in procedure to the sale/assessment ratio method used for the residential classes of property as described previously.

The main differences are that there are fewer sales, particularly for the individual classes, and that a much broader locational stratification must be used. At the same time, the broader locational stratification is particularly suitable for these classes in order to distinguish value changes between the downtown area and the rest of the city.

The 57 commercial assessment districts were split into two regions because of the differences in both property characteristics and property values that exist between the two regions. The two locational regions are:
(1) Ten existing commercial assessment districts representing Downtown and Back Bay; and
(2) Forty-seven remaining commercial assessment districts for the outlying areas of the city.

A map showing the delineation of these two commercial regions is attached in the appendix as Exhibit COM-3. Because of the complex variety of income-producing property, stratification by property type is necessary in order to develop meaningful trends from the sale/assessment ratios. One reason for this is that the values of a particular type of property may change or appreciate at a different rate than another property type. Therefore, the commercial property was separated into eight homogeneous groups:

(1)	Apartment (A)	(5)	Comm. Condo (CC)
(2)	4-6 Unit (R4)	(6)	Comm. Land (CL)
(3)	Residential- Commercial (RC)	(7)	Industrial (I)
(4)	Commercial (C)	(8)	Lodging

The table below displays the 1986 sale/assessment ratios which reflect the 1986 Boston market. The ratios are a comparison of the 1986 fair market sales to their respective assessments at the time of sale. They have been stratified according to property type and location, and the mean and median sales/assessment ratios have been calculated for each property class as follows:

Table COM - 4

Median and Mean Sale/Assessment Ratios

PROPERTY CLASS	CITY-WIDE			DOWNTOWN AND BACK BAY			OUTLYING AREAS		
	NO. OF SALES	MEDIAN RATIO	MEAN RATIO	NO. OF SALES	MEDIAN RATIO	MEAN RATIO	NO. OF SALES	MEDIAN RATIO	MEAN RATIO
A	60	1.29	1.29	25	1.37	1.36	35	1.25	1.24
R4	152	1.33	1.33	39	1.38	1.42	113	1.31	1.30
RC	91	1.41	1.40	15	1.40	1.41	76	1.42	1.41
C	97	1.45	1.47	31	1.57	1.50	66	1.43	1.45
CC	28	1.32	1.37	24	1.35	1.40	*	*	*
CL	22	1.11	1.15	*	*	*	22	1.11	1.15
I	12	1.34	1.38	*	*	*	11	1.25	1.23

* INSUFFICIENT DATA

The sale/assessment ratios measure the disparity between the individual assessments and sale prices, which are indicative of the current market.

At the same time, the ratios illustrate a pattern which suggests the direction and magnitude of possible market indexing factors. This pattern lends support to those factors that are developed via the income capitalization approach. Additionally, the ratios provide a guide for distinguishing the rate of change of property value among the various commercial classes, as well as between the central business district and outlying areas of the City.

Evaluation of Data and Selection of

Market Indexing Factors for Commercial

Properties (A-R4-RC-C-I-CL)

Along with using the most factual information and statistical analysis about the impact of changes in the indicators of value, the evaluation process included a review of current market appreciation trends, and application of the informed judgment of experienced appraisal personnel who are familiar with the real estate markets in Boston. The key feature of this process was comparing the results of the sale/assessment ratio analysis with the cap rate analysis, recognizing that both approaches generate indicators of value changes and not absolute figures.

In order to establish the market indexing factor for each class and region of commercial properties, the statistical indicators of the two approaches previously outlined were reconciled. However, more weight was applied to the income capitalization approach since it is the primary method of valuing commercial property in the City of Boston. Also, shifting patterns in the economy which affect the commercial real estate market can be identified and documented more easily via the income approach than through a limited number and variety of property sales. The sale/assessment ratio analysis was used more as support for the selection of a final indicator of value.

Summary and Conclusions

The following paragraphs summarize the results of the preceeding study.

Apartment Property

The apartment properties (A, R4) had similar sale ratios citywide and in the outlying areas, and had slightly higher ratios in the Central Business District (CBD). For outlying areas, the sale/assessment study produced ratios in the range of between 1.25 and 1.31. In the Downtown and Back Bay regions, the study yielded median ratios of 1.37 and 1.38. The capitalization of income approach supported an index factor of 1.34 for apartment property, which was the highest factor of all property groups. Therefore, the index factor for both A's and R4's might be expected to fall within the range of 1.25 to 1.35.

Residential-Commercial Property

The RC group had a median sale ratio of 1.41 and a mean of 1.40 citywide, and these ratios were the same for both Downtown and outlying areas. Because of the nature of RC property, split residential and commercial use, the income analysis is not considered a reliable indicator of value. Therefore, the final index factor is usually a composite number, based on commercial and apartment index factors as well as RC sales ratios. The indicated range of index factors would most likely be 1.15 to 1.30.

Commercial Property

The median and mean sale ratios for commercial property Citywide are
1.45 and 1.47. The outlying areas show somewhat lower ratios than the
Downtown area (1.43 - 1.45 versus 1.50 - 1.57). The retail and office
trending factors developed through the income capitalization approach
are significantly lower than these sales ratios, however, indicating a
trending factor in the range of 1.11 (office) - 1.15 (retail). More
credibility is placed on the income approach because of the relatively
small sample of market sales, as well as other reasons mentioned
previously in the report.

Commercial Condominiums

As a result of the sale/assessment ratio study, a market indexing factor
in the range of 1.32 - 1.40 is indicated for central business district
commercial condominiums. There is insufficient data to support a
separate market indexing factor for the outlying areas of the City.
Therefore, condominiums in the outlying areas were compared to the
centrally-located condos for development of a trending factor. Since
commercial condos are typically for retail and office use, the final
index factor will reflect the overall commercial property factor, and
therefore represent a composite index factor.

Commercial Land

The median and mean sale ratios for commercial land (CL) Citywide are
1.11 and 1.15. As seen in previous years, commercial land sales do not
occur frequently in downtown Boston. Therefore, the final indexing
factor represents a blend between the sales ratios and commercial index
factors.

Industrial Property

For the industrial class, sales are as infrequent in the CBD (downtown area) as are CL sales. The 12 industrial sales suggest a median ratio of 1.25 based on sales in the outlying area. The capitalization rate approach resulted in an index factor of 1.16, which received the most consideration in the final analysis of market indicators. However, from a valuation standpoint, industrial property has to be viewed in relation to commercial property: industrial property generally appreciates at a slower rate than commercial property, especially in the outlying regions. Therefore, the market index factor would not be expected to be higher than the commercial factors.

Lodging

There was insufficient hotel and motel data for developing sale/assessment ratios. Hotels and motels will not be trended by class along with other property types. Rather, the same procedures (the income approach) used to value this property type in FY'87 were employed for FY'88, in conjunction with a capitalization rate development based on mortgage rate indicators, equity return indicators, and other monetary factors.

Final Note

In the final determination of commercial market index factors, it is appropriate to mention several policy considerations that affected the selection process.

First, a single index factor will be utilized for each commercial property type, despite the different characteristics between the downtown property and outlying area. Although property location is naturally an important consideration, and although various analyses are routinely performed according to assessment districts (e.g. downtown vs. outlying area), the resulting data did not support the use of multiple index factors for each property type.

Second, when selecting an index factor for each specific property type, it is important to consider the overall range of factors that are developed for the whole group of property types. The total range of index factors should be narrow rather than expansive, so that no one individual set of property values is increased unreasonably in comparison to all others. As mentioned in the introduction to this report, a selection of index factors that is conservative, and also consistent within the group as a whole, best accomplishes the objectives of trending values while maintaining equity.

FISCAL YEAR 1988

FINAL MARKET INDEXING FACTORS

FOR COMMERCIAL, INDUSTRIAL, APARTMENT PROPERTY

PROPERTY CLASS	INDEX FACTOR
A	1.22
R4	1.22
RC	1.22
C	1.15
CC	1.20
CL	1.12
I	1.10

APPENDIX 1

Exhibit RES-1   Map of Market Trending Regions
                            Single Family

Exhibit RES-2   Map of Market Trending Regions
                            Two Family

Exhibit RES-3   Map of Market Trending Regions
                            Three Family

Exhibit RES-4   Market Indexing Factors, R1, R2, R3
                            Properties by Assessment District

Exhibit RES-5   Map of Market Trending Regions
                            Condominiums

Exhibit RES-6   Market Indexing Factors, Condominiums,
                            by Condominium Assessment District

Exhibit RES - 1

CITY OF BOSTON
Assessing Department

RAYMOND L. FLYNN, MAYOR
THADDEUS J. JANKOWSKI, JR., COMMISSIONER

CHARLESTOWN

ALLSTON-BRIGHTON

CENTRAL

BACK BAY-BEACON HILL
BAY VILLAGE

EAST BOSTON

FENWAY-KENMORE

ROXBURY

JAMAICA PLAIN

ROSLINDALE

SOUTH BOSTON

SOUTH END

NORTH DORCHESTER

SOUTH DORCHESTER

MATTAPAN

WEST ROXBURY

HYDE PARK

```
0    .5    1
.25  .25  .75
Scale in Miles
```

R-I TRENDING VALUES
BY
RESIDENTIAL ASSESS.
DISTRICTS

⊠ HIGH   ⊠ MEDIUM   ☐ LOW

CITY OF BOSTON
Assessing Department

RAYMOND L. FLYNN, MAYOR
THADDEUS J. JANKOWSKI, JR., COMMISSIONER

CHARLESTOWN

ALLSTON-BRIGHTON

CENTRAL

EAST BOSTON

BACK BAY-BEACON HILL
BAY VILLAGE

FENWAY-KENMORE

SOUTH BOSTON

ROXBURY

SOUTH END

JAMAICA PLAIN

NORTH DORCHESTER

ROSLINDALE

SOUTH DORCHESTER

MATTAPAN

WEST ROXBURY

HYDE PARK

0   .5   1
.25   .25   .75
Scale In Miles
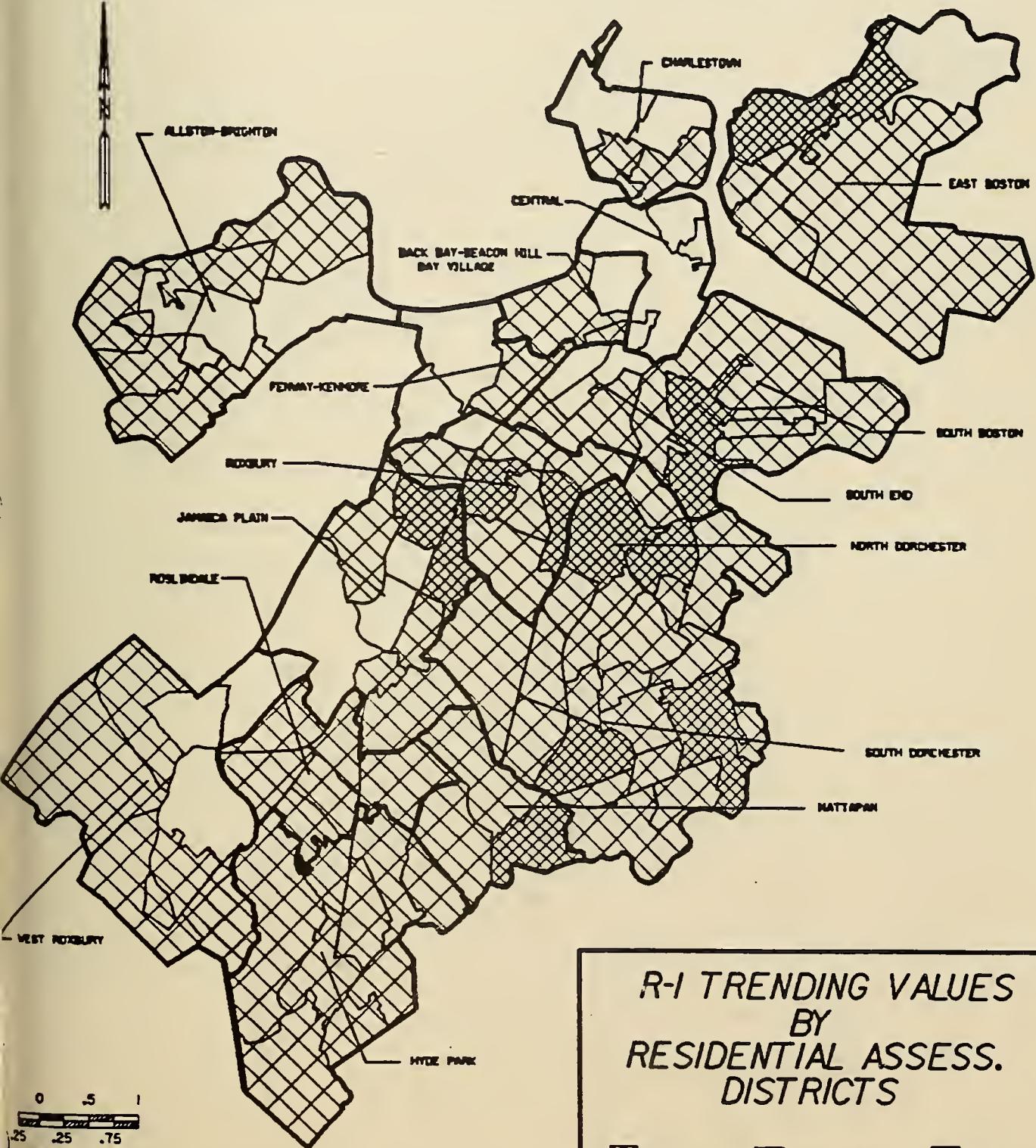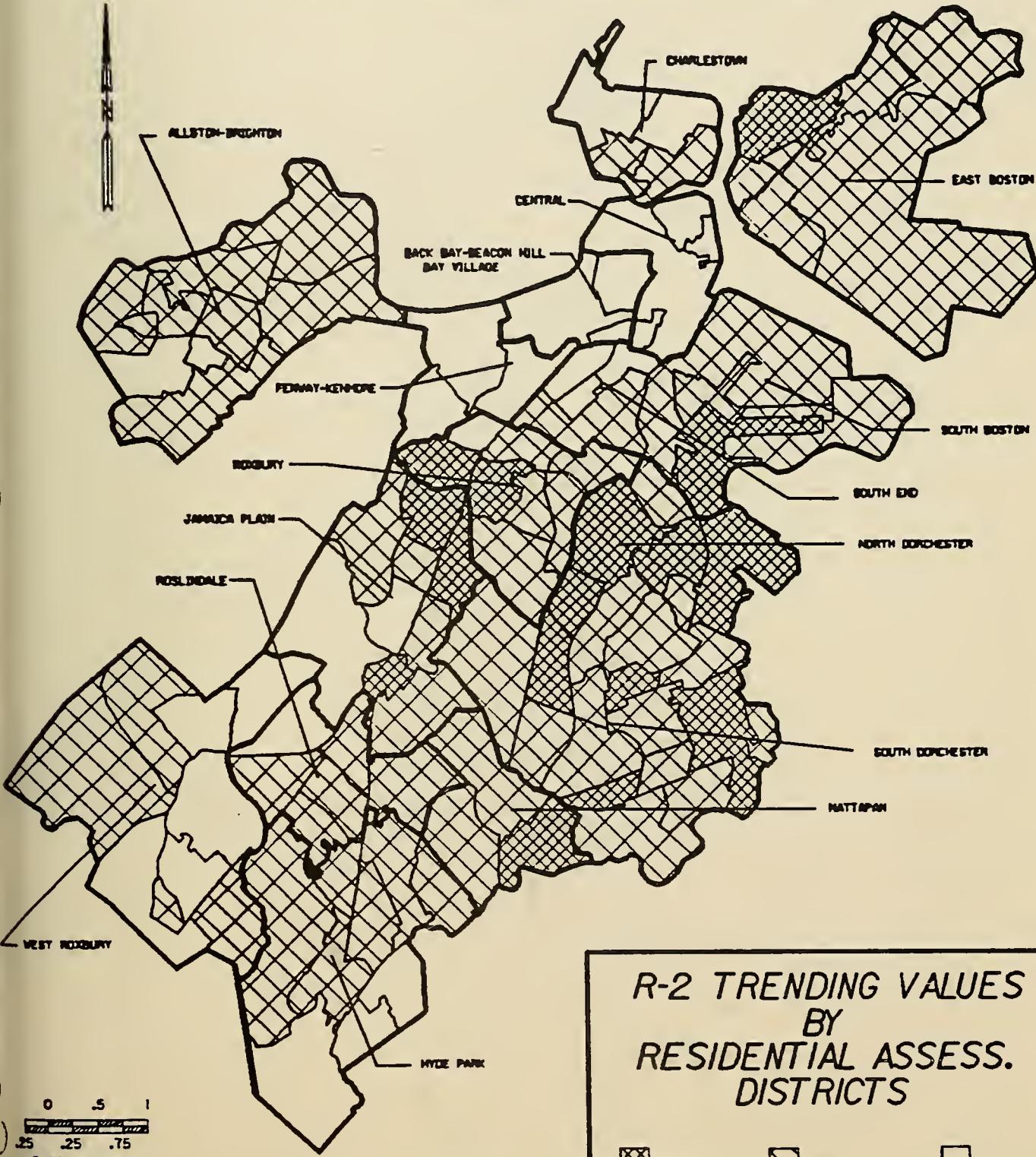
R-2 TRENDING VALUES
BY
RESIDENTIAL ASSESS.
DISTRICTS

⊠ HIGH   ⊠ MEDIUM   ☐ LOW

Exhibit RES - 3

CITY OF BOSTON
Assessing Department

RAYMOND L. FLYNN, MAYOR
THADDEUS J. JANKOWSKI, JR., COMMISSIONER

R-3 TRENDING VALUES
BY
RESIDENTIAL ASSESS.
DISTRICTS

⊠ HIGH   ◨ MEDIUM   ☐ LOW

Scale in Miles
0   .5   1
.25   .25   .75
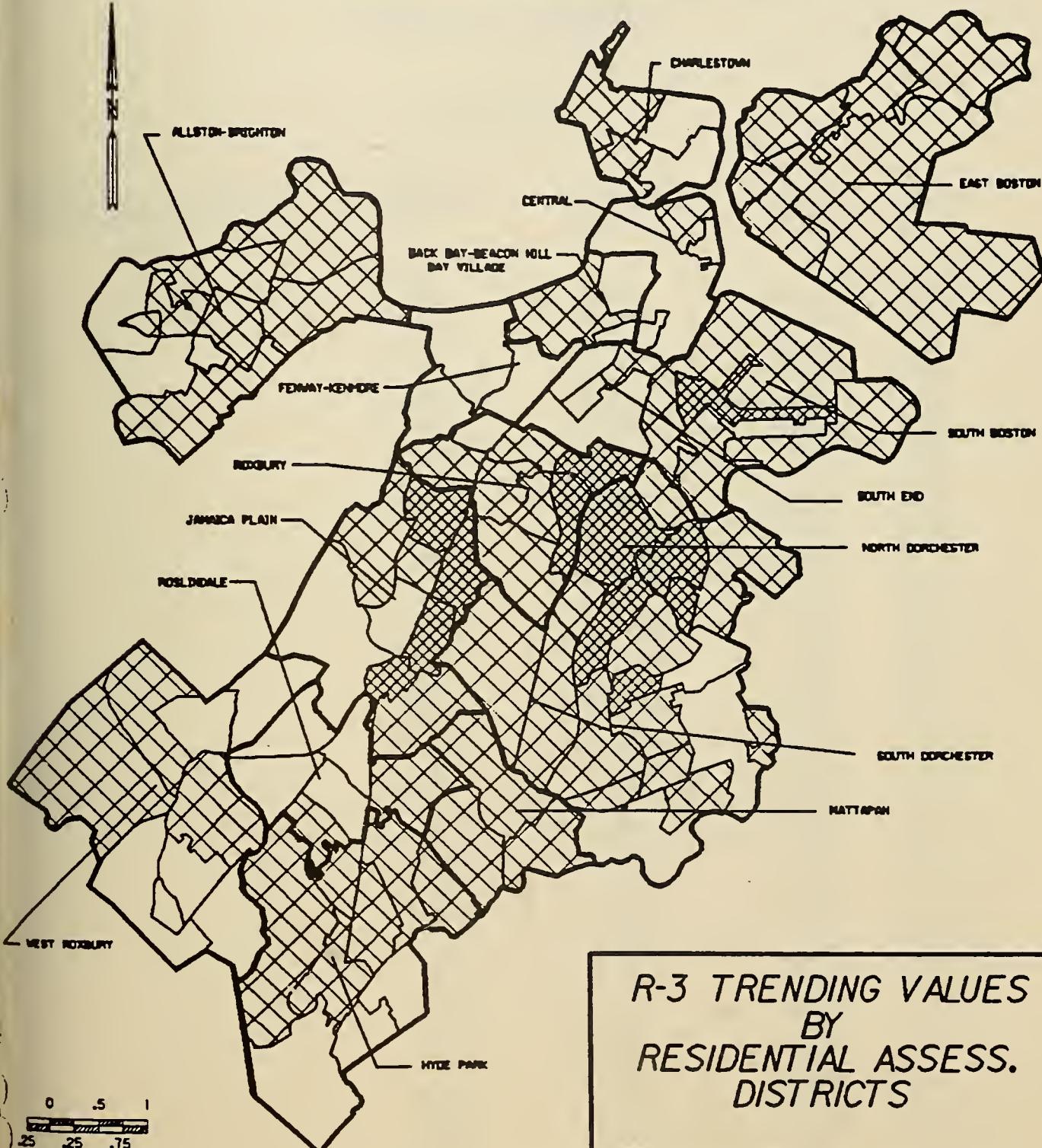
EXHIBIT RES-4
SUMMARY OF MARKET INDEX FACTORS

FOR RESIDENTIAL PROPERTIES

R1, R2, R3

Residential Assessment District (Res.)	Factor R1	Factor R2	Factor R3	Factor RL
0101	1.28	1.27	1.26	1.28
0102	1.28	1.20	1.26	1.28
0103	1.15	1.20	1.26	1.15
0104	1.22	1.20	1.26	1.22
0105	1.22	1.20	1.26	1.22
0106	1.22	1.20	1.26	1.22
0107	1.22	1.20	1.26	1.22
0201	1.15	1.16	1.26	1.15
0202	1.15	1.16	1.18	1.15
0205	1.22	1.20	1.26	1.22
0207	1.22	1.20	1.18	1.22
0301	1.15	1.16	1.26	1.15
0303	1.15	1.16	1.18	1.15
0401	1.22	1.16	1.26	1.22
0402	1.15	1.16	1.18	1.15
0404	1.22	1.16	1.18	1.22
0501	1.15	1.16	1.18	1.15
0601	1.15	1.16	1.18	1.15
0603	1.22	1.16	1.18	1.22
0701	1.22	1.20	1.18	1.22
0702	1.15	1.20	1.26	1.15
0703	1.22	1.20	1.26	1.22
0705	1.22	1.20	1.26	1.22
0707	1.15	1.20	1.26	1.15
0709	1.22	1.20	1.26	1.22
0710	1.22	1.16	1.18	1.22
0711	1.15	1.16	1.18	1.15
0712	1.15	1.20	1.26	1.15
0713	1.22	1.20	1.26	1.22
0801	1.15	1.16	1.18	1.15
0803	1.15	1.16	1.18	1.15
0805	1.22	1.27	1.26	1.22
0902	1.15	1.16	1.18	1.15
0904	1.15	1.16	1.18	1.15
0905	1.22	1.20	1.18	1.22
0908	1.15	1.16	1.26	1.15

esidential Assessment. strict (Res.)	Factor R1	Factor R2	Factor R3
1001	1.22	1.20	1.26
1002	1.28	1.20	1.30
1004	1.22	1.27	1.30
1006	1.28	1.27	1.26
1008	1.22	1.27	1.18
1010	1.22	1.20	1.26
1101	1.15	1.16	1.18
1102	1.22	1.20	1.26
1104	1.28	1.27	1.30
1105	1.15	1.20	1.26
1107	1.15	1.16	1.18
1109	1.28	1.27	1.30
1110	1.22	1.20	1.30
1111	1.22	1.27	1.30
1112	1.22	1.20	1.26
1201	1.22	1.20	1.26
1202	1.22	1.20	1.30
1203	1.28	1.20	1.30
1204	1.22	1.20	1.26
1205	1.28	1.27	1.26
1206	1.22	1.20	1.26
1301	1.28	1.27	1.30
1303	1.22	1.27	1.26
1305	1.22	1.20	1.30
1306	1.28	1.27	1.30
1307	1.22	1.27	1.26
1308	1.22	1.20	1.26
1401	1.22	1.16	1.18
1402	1.22	1.20	1.18
1403	1.22	1.20	1.26
1404	1.22	1.20	1.18
1405	1.22	1.20	1.18
1406	1.22	1.20	1.26
1501	1.22	1.20	1.26
1502	1.28	1.27	1.26
1503	1.22	1.20	1.26
1601	1.22	1.20	1.30
1602	1.22	1.27	1.30
1603	1.22	1.20	1.18
1604	1.22	1.20	1.18
1605	1.28	1.20	1.26
1506	1.22	1.27	1.18
1607	1.28	1.20	1.26
1608	1.22	1.27	1.26
1609	1.22	1.20	1.26
1610	1.22	1.20	1.26
1611	1.22	1.20	1.18
1612	1.22	1.20	1.26
1613	1.22	1.20	1.26
1701	1.22	1.20	1.26
1703	1.22	1.20	1.26
	1.15	1.16	1.18

Residential Assessment District (Res.)	Factor R1	Factor R2	Factor R3
1705	1.15	1.16	1.18
1706	1.15	1.16	1.26
1707	1.22	1.16	1.18
1708	1.22	1.16	1.18
1709	1.22	1.20	1.18
1710	1.22	1.20	1.18
1801	1.22	1.20	1.18
1802	1.22	1.20	1.26
1803	1.22	1.20	1.26
1804	1.22	1.20	1.26
1805	1.22	1.20	1.26
1806	1.22	1.20	1.26
1808	1.22	1.26	1.18
1809	1.22	1.16	1.18
1810	1.22	1.16	1.18
1901	1.22	1.20	1.26
1902	1.22	1.27	1.26
1903	1.22	1.20	1.26
2001	1.15	1.16	1.18

Exhibit RES - 5

CITY OF BOSTON
Assessing Department

RAYMOND L. FLYNN, MAYOR
THADDEUS J. JANKOWSKI, JR., COMMISSIONER

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TRENDING VALUES
BY
CONDOMINIUM ASSESS.
DISTRICTS

⊠ HIGH   ◩ MEDIUM   ☐ LOW

0   .5   1
.25   .25   .75
Scale In Miles
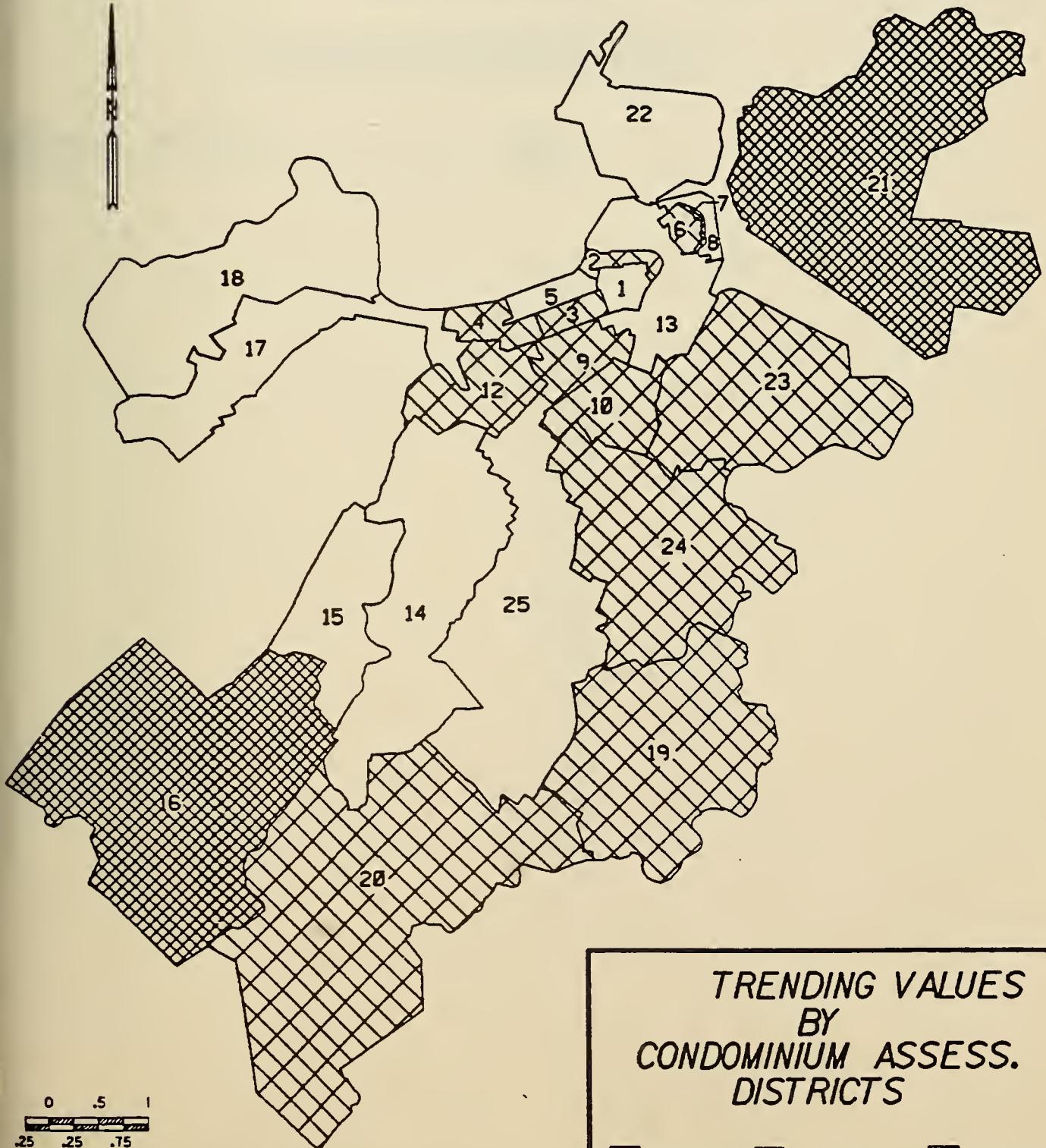
Exhibit   RES-6

Market Index Factors

For Residential Condominium Properties (CD)
By Condominium Assessment District

Residential Condominium District	Index Factor
1.	1.14
2.	1.18
3.	1.18
4.	1.18
5.	1.14
6.	1.18
7.	1.27
8.	1.14
9.	1.18
10.	1.18
11.	1.27
12.	1.18
13.	1.14
14.	1.14
15.	1.14
16.	1.27
17.	1.14
18.	1.14
19.	1.18
20.	1.18
21.	1.27
22.	1.14
23.	1.18
24.	1.18
25.	1.14

APPENDIX 2

Exhibit COM-1: Published Interest/Investment Rates, 1984-1987

Exhibit COM-2: Published Capitalization Rates (ACLI), 1985-1986

Exhibit COM-3: Map of Commercial Assessment Districts

EXHIBIT COM - 1

QUOTED INTEREST RATES FROM 1984 to PRESENT FROM

FEDERAL RESERVE BOARD PUBLICATIONS

1984

	MONEY MARKET RATES					CAPITAL MARKET RATES	
	Prime Rate (HUD series)	FHA Rate	Federal Funds	Cert. of Depos	Disc Window Borrow	U.S. Treas. notes, bonds 5 year	Corp. Bonds seasoned AAA
Jan	11.00	13.08	9.56	9.42	8.50	11.37	12.20
Feb	11.00	13.20	9.59	9.54	8.50	11.54	12.08
Mar	11.21	13.68	9.91	10.08	8.50	12.02	12.57
Apr	11.93	13.80	10.29	10.41	8.87	12.37	12.81
May	12.39	15.01	10.32	11.11	9.00	13.17	13.28
Jun	12.60	14.91	11.06	11.34	9.00	13.48	13.55
Jul	13.00	14.58	11.23	11.56	9.00	13.28	13.44
Aug	13.00	14.21	11.64	11.47	9.00	12.69	12.87
Sep	12.97	13.99	11.30	11.29	9.00	12.53	12.66
Oct	12.58	13.43	9.99	10.38	9.00	12.06	12.63
Nov	11.77	12.90	9.43	9.18	8.83	11.33	12.29
Dec	11.06	12.99	8.38	8.60	8.37	11.07	12.13

AVERAGES

July-Dec Only

	12.40	13.68	10.33	10.41	8.87	12.16	12.67

Annual

	12.04	13.82	10.23	10.37	8.80	12.24	12.71

1985

	MONEY MARKET RATES					CAPITAL MARKET RATES	
	Prime Rate (HUD series)	FHA Rate	Federal Funds	Cert. of Depos	Disc. Window Borrow	U.S. Treas. notes & bonds 5 year	Corp. Bonds seasoned AAA
Jan	10.61	13.01	8.35	8.14	8.00	10.93	12.08
Feb	10.50	13.27	8.50	8.69	8.00	11.13	12.13
Mar	10.50	13.43	8.58	9.02	8.00	11.52	12.56
Apr	10.50	12.97	8.27	8.49	8.00	11.01	12.23
May	10.31	12.28	7.97	7.91	7.81	10.34	11.72
Jun	9.78	11.89	7.53	7.44	7.50	9.60	10.94
Jul	9.50	12.12	7.88	7.64	7.50	9.70	10.97
Aug	9.50	11.99	7.90	7.81	7.50	9.81	11.05
Sep	9.50	12.04	7.92	7.93	7.50	9.81	11.07
Oct	9.50	11.87	7.99	7.88	7.50	9.69	11.02
Nov	9.50	11.28	8.05	7.81	7.50	9.28	10.55
Dec	9.50	10.70	8.28	7.80	7.50	8.73	10.16

AVERAGES

July/ Dec	9.50	11.67	8.00	7.81	7.50	9.50	10.80
Annual	9.93	12.24	8.10	8.05	7.69	10.13	11.37

1986

	MONEY MARKET RATES					CAPITAL MARKET RATES	
	Prime Rate	FHA Mtg Rate	Federal Funds	Cert of Deposit (3 Mon)	Disc. Window Borrow	U.S. Treas notes, bonds 5 year	Corp. Bonds (seasoned) AAA
Jan	9.50	10.78	8.14	7.82	7.50	8.68	10.05
Feb	9.50	10.59	7.86	7.69	7.50	8.34	9.67
Mar	9.10	9.77	7.48	7.24	7.10	7.46	9.00
Apr	8.83	9.80	6.99	6.60	6.83	7.05	8.79
May	8.50	10.07	6.85	6.65	6.50	7.52	9.09
Jun	8.50	9.98	6.92	6.73	6.50	7.64	9.13
Jul	8.16	10.01	6.56	6.37	6.16	7.06	8.88
Aug	7.90	9.80	6.17	5.92	5.82	6.80	8.72
Sept	7.50	9.90	5.89	5.71	5.50	6.92	8.89
Oct	7.50	9.80	5.85	5.69	5.50	6.83	8.86
Nov	7.50	9.26	6.04	5.76	5.50	6.76	8.68
Dec	7.50	9.21	6.91	6.04	5.50	6.67	8.49

Average

Annual

18.33	9.91	6.81	6.52	6.33	7.31	9.02

July - Dec only

7.68	9.66	6.24	5.92	5.66	6.84	8.75

1987

	MONEY MARKET RATES					CAPITAL MARKET RATES	
	Prime Rate	FHA Mtg Rate	Federal Funds	Cert of Deposit (3 Mon)	Discnt Window Borrow	U.S. Treas notes, bonds 5 year	Corp Bonds (seasoned) AAA
Jan	7.50	8.79	6.43	5.87	5.50	6.64	8.36
Feb	7.50	8.81	6.10	6.10	7.50	6.79	8.38
Mar	7.50	8.94	6/13	6.17	5.50	6.79	8.36
Apr	7.75	10.02	6.37	6.52	5.50	7.57	8.85
May	8.14	10.61	6.85	6.99	5.50	8.26	9.33
Jun	8.25	10.33	6.73	6.94	5.50	8.02	9.32

Averages
(Jan - June 1987)

	7.77	9.58	6.44	6.43	5.83	7.35	8.77

CAPITALIZATION RATES FOR
MULTIFAMILY AND NON-RESIDENTIAL MORTGAGES
## (AMERICAN COUNCIL ON LIFE INSURANCE)

PERIOD	AVERAGE CAPITALIZATION RATE (%)
1985 January	10.4
February	10.6
March	10.4
April	10.3
May	10.2
June	10.0
July	10.0
August	10.0
September	9.9
October	9.8
November	10.1
December	9.7
1986 January	9.5
February	9.5
March	9.5
April	9.3
May	9.2
June	9.4
July	9.2
August	9.0
September	9.1
October	9.4
November	8.9
December	9.0

ANNUAL AVERAGES

YEAR	AVERAGE CAP RATE	PERCENT (%) CHANGE
1982	12.35	
1983	11.14	-10
1984	10.83	- 3
1985	10.12	- 7
1986	9.25	- 9

Exhibit COM - 3

Commercial Trending Areas (A-R4-RC-C-CC-CL-I)

Class	Factor
A	1.22
R4	1.22
RC	1.22
C	1.15
CC	1.20
CL	1.12
I	1.10
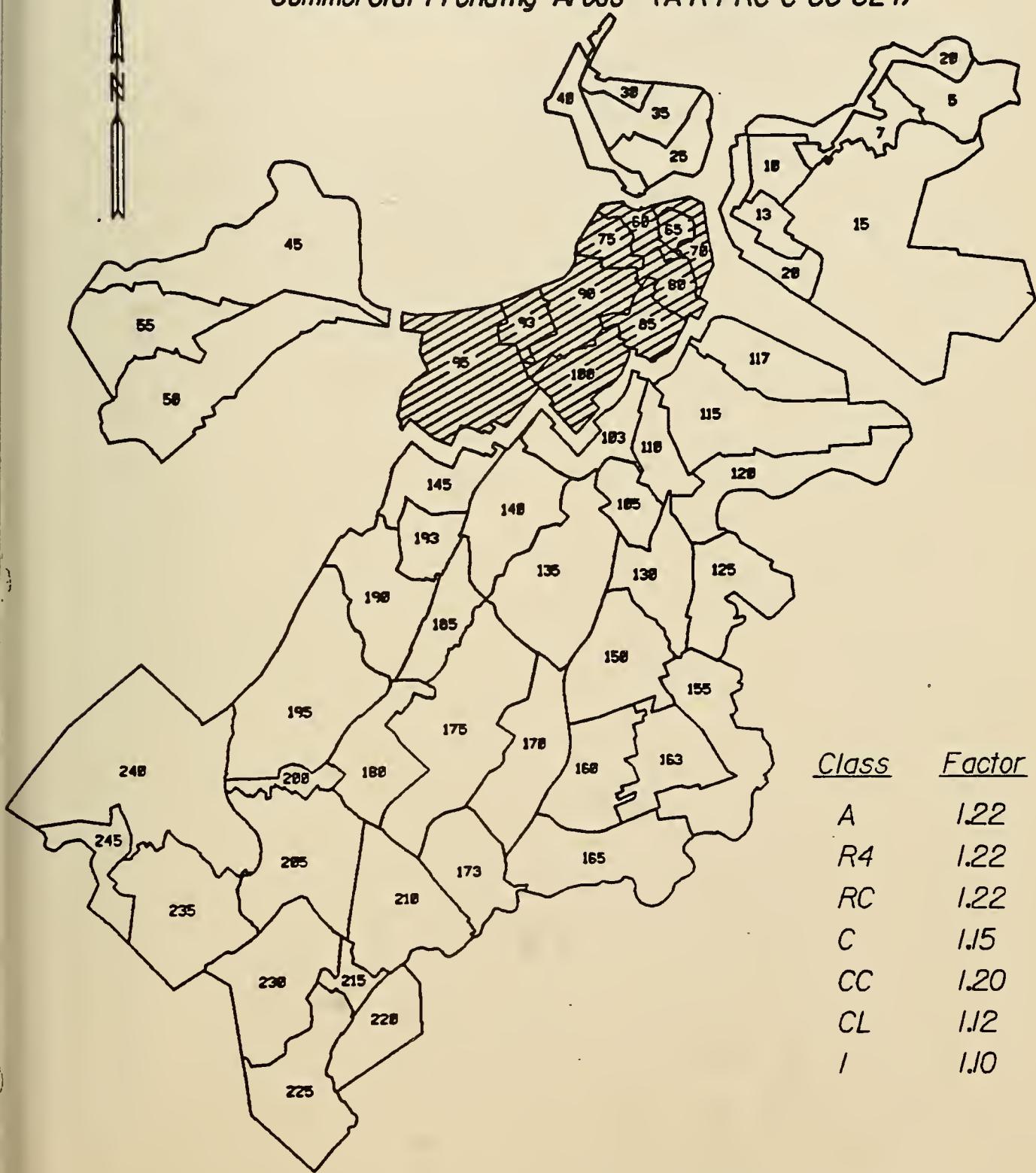
Downtown, Back Bay CAD 60-100